DNRP
KingStat Improving Government Service and Performance 2011 Report

COMMUNITY AND ENVIRONMENTAL INDICATORS | PERFORMANCE MEASURES

Aquatic Environment | Land & Resources | Health & Safety | Resource Consumption | Climate Protection | Environment | People & Communities | Fiscal and Economic

Welcome to KingStat 2011

April 19, 2012

The "King County Strategic Plan, 2010 - 2014: Working Together for One King County" is a key component in Executive Constantine's work to reform County government to enhance customer service, improve equity and social justice, and achieve greater efficiency and productivity. Much of our performance improvement work is focused on aligning Department of Natural Resources and Parks (DNRP) programs to the goals, objectives and strategies outlined in the King County Strategic Plan.

Christie True
Director for DNRP

Progress is being made quickly, as DNRP has a robust performance management program in place that addresses key strategic plan elements, including customer satisfaction, partnerships, efficiencies and employee engagement. We also collect, analyze, and portray a broad spectrum of findings about environmental and community conditions that the strategic plan seeks to influence, such as forest cover, climate adaptation and clean water.

Additionally, DNRP is advancing several priority areas for internal process and performance improvements, including:

- Identifying and responding to "drivers of satisfaction" that are important to those with whom we have direct customer transactions;
- Using service delivery results and outcomes as we gather input and guidance from various partners and the public;
- More clearly sharing performance expectations with employees through scorecard tools; and
- Using a DNRP product catalog to define performance improvements, including customer satisfaction, efficiency and equity in service delivery.

Our performance management system is configured to meet the needs of several audiences and users:

- For elected officials in King County, performance information helps them keep our programs accountable by reporting results and identifying areas for improvement;
- For DNRP leadership, performance information shows what strategies are succeeding, and where adjustments are needed to improve outcomes;
- For public, private, and community-based partners and collaborators, performance information provides
- a snapshot of current priorities and helps elicit stakeholder
- feedback; and
- For DNRP employees, performance information helps define priorities, establishes targets and provides feedback on the results of their work.

Thank you for your interest in DNRP's performance. Please let us know about suggestions for adjusting priorities, improving our performance, or improving how we report on results. We recognize performance improvement is an ongoing journey, and are glad for your help along the way.

Sincerely,
Christie True, Director
King County Department of Natural Resources and Parks

Flash

Visual representation of DNRP's KingStat Program

DNRP Vision Mission and Goals

DNRP Equity

King County AIMs High

DNRP Budget And Organization Chart

Previous Reports

2010 KingStat report

2009 KingStat - 5.6 MB PDF

2008 KingStat - 5.8 MB PDF

2007 KingStat - 5.8 MB PDF

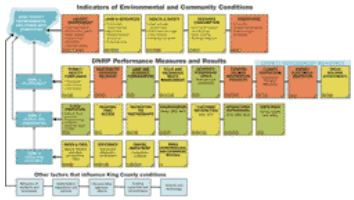
2006 KingStat - 4.7 MB PDF

2005 Measuring for Results - 7meg PDF

2004 Measuring for Results - 4.4meg PDF

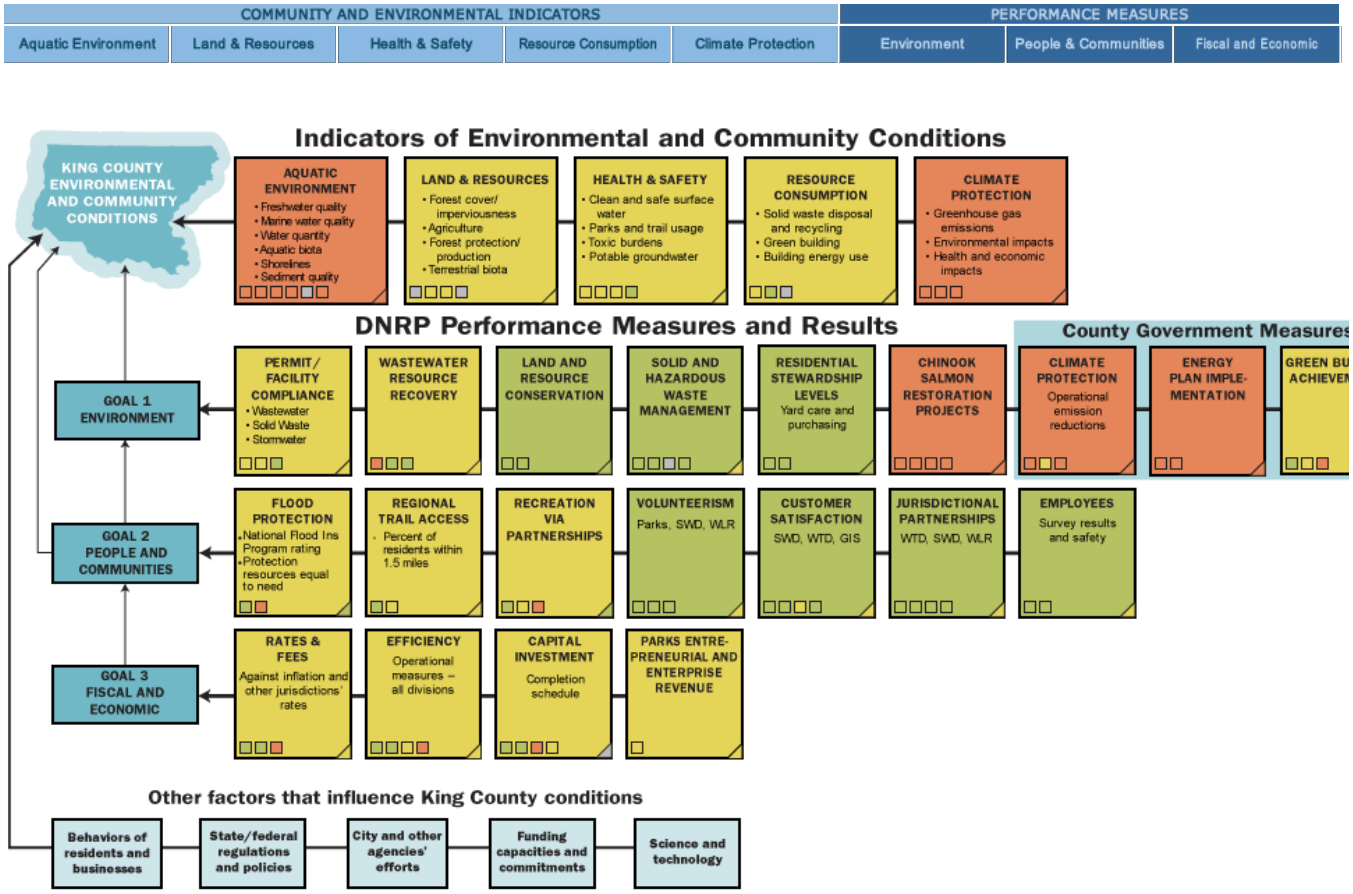
2003 Measuring for Results - 4.3meg PDF

News



King County performance reporting wins national awards

HOW ARE WE DOING?



Indicators Legend
- Meets or exceeds standard, goal, or improved from prior years
- Approaching standard goal, or steady with prior years
- Below standard, goal, or decline from prior years
- Insufficient data

Performance Measures Legend
- Meets or exceeds target
- Approaches target (less than 10% away from target)
- Needs improvement (more than 10% away from target)
- Insufficient data

DNRP Goals

Environment Minimize waste and emissions, maximize resource re-use and recovery, and protect and restore habitats, ecological functions and aquatic conditions.

People and Communities Protect and improve human health, safety, and wellness – minimize hazards (including toxic exposures and flood risk), maximize opportunities for community building and fitness, build internal capacity for excellence in service delivery.

Fiscal Responsibility and Economic Vitality Support King County's economic development goals and ensure ratepayer value through effective, efficient and equitable program implementation.

General Legend

INDICATOR OR MEASURE

Number and rating of components

2009 rating

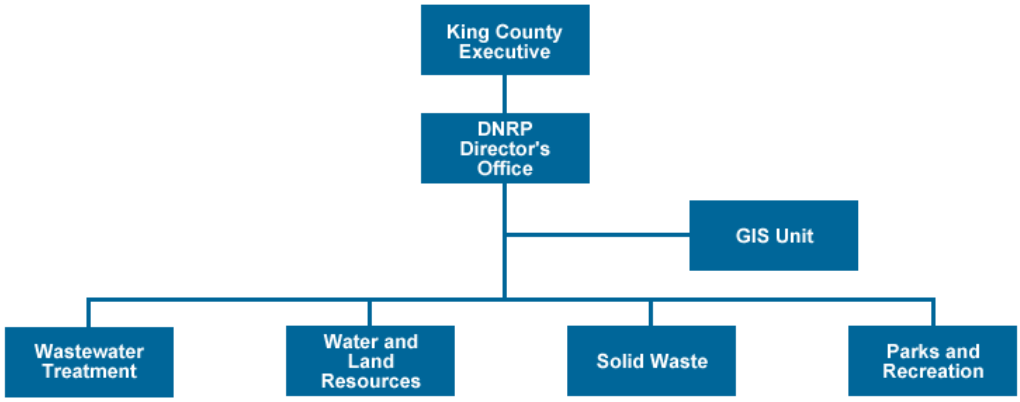
Acronyms

GIS King County GIS (Geographic Inform System) Center
SWD Solid Waste Divisio
WLR Water & Land Reso Division
WTD Wastewater Treatm Division

[Download PDF version of KingStat 2011 Performace Summary](#) 135Kb

DNRP BUDGET AND ORGANIZATION CHART

COMMUNITY AND ENVIRONMENTAL INDICATORS					PERFORMANCE MEASURES		
Aquatic Environment	Land & Resources	Health & Safety	Resource Consumption	Climate Protection	Environment	People & Communities	Fiscal and Economic



Summary budget by organization

	DNRP	DO	GIS	WTD	SWD	WLRD	Parks
2008	$477.6M (O) $384.4M (C)	$5.2M (O)	$4.4M (O)	$273.5M (O) $233.0M (C)	$59.7M (O) $45.9M (C)	$106.4M (O) $79.0M (C)	$28.4M (O) $26.5M (C)
2009	$484M (O) $333.7M (C)	$5.3M (O)	$4.4M (O)	$280.8M (O) $167.6M (C)	$57.5M (O) $69.4M (C)	$107.2M (O) $75.2M (C)	$28.8M (O) $21.5M (C)

(O) = Operating
(C) = Capital

DNRP EQUITY AND SOCIAL JUSTICE PROGRAM AND ACTIVITIES

Executive Dow Constantine and the King County Council have worked together to establish Ordinance 16948 which formalized the "Fair and Just" principle of the King County Strategic Plan. DNRP is an active ESJ participant, with a variety of programs and services that are reviewed for their distributional equity.

More and more, we are recognizing that our prosperity and quality of life depend upon the ability of everyone who lives, works and plays in King County to benefit. DNRP has an important role in advancing this work.

Here are several DNRP examples:

- Parks now considers geography when improving existing facilities or expanding its system, because the proximity to exercise and recreational opportunities is linked to community health. Recent examples include extensive improvements to parks in Skyway and White Center, increased support to the teen program in White Center, and continued regional support for the Lake-to-Sound Trail — a 16-mile-long trail that would link five cities and four regional trails in south King County.
- WTD has established a standing contract for phone-in translation services that give field personnel access to a variety of languages.
- SWD provides technical assistance and grants to incorporate green building practices into affordable housing projects, and the division is advancing policies to provide expanded recycling to residents of multi-family housing.
- WLRD worked with the King County Flood Control District and the DNRP Director's Office to produce emergency preparedness public service announcements in 24 languages.
- Human resources advertises employment announcements via social media to help attract and recruit at all generational levels. Hiring requirements have also been adjusted to eliminate potential barriers, such as a college degree or driver's license, when not necessary for the job.

Going forward, DNRP will focus on improvements to:

- Engaging a broad array of stakeholders,
- Examining the distribution of both benefits and burdens of service delivery, and
- Considering and adjusting our decisions and actions based on how they impact future generations.

Thank you for helping DNRP lead in equity and social justice in King County. If you have follow-up questions, please contact:

- **Richard Gelb, DNRP ESJ lead**
- **Cristina Gonzalez, Parks ESJ lead**
- **Larry Jones, WLRD ESJ lead**
- **Rachael Dillman, WTD ESJ lead**
- **Rodney Proctor, SWD ESJ lead**

Additional Resources

- **DNRP 2011 Equity and Social Justice Accomplishments Narrative summary** - 64KB PDF
- **Equity and Social Justice 2011 Work Plan Summary for DNRP** - 92KB PDF
- **King County Equity program**

DNRP Equity Assessment Description

Background

In support of the King County Equity and Social Justice Initiative (**http://www.kingcounty.gov/equity**), DNRP recently carried out an equity assessment for its major lines of business. The assessment utilized Geographic Information Systems (GIS) to map how selected services and facilities relate to basic demographic conditions.

This comparison helps identify and address the relative fairness in distribution of benefits and burdens across our service areas, with the goal of reducing racial or income-based inequity associated with facilities and programs.

Having this basic, screening-level understanding of how our service portfolio impacts residents of various demographic backgrounds provides a useful perspective for more detailed assessments, if needed. When considering capital improvements, outreach or planning decisions, these maps help assess the potential impacts of new actions as they relate to current service levels and spatial demographics.

Using GIS maps, DNRP has identified relationships between basic demographic characteristics and selected outcomes, including:

- The proximity of residents of various race and income levels to potentially undesirable facilities (e.g. transfer stations, pump stations);
- The proximity of residents of various race and income levels to desirable facilities (e.g. regional trails) or services; and
- The degree that residents of various race and income levels utilize services and/or are impacted by community conditions

Approach

DNRP's method for assessing the equity of facility and service distribution includes these steps:

1. Map King County census block groups using six categories of race and income
2. Plot selected DNRP facilities, service levels, and/or impact areas
3. Create facility or program "catchment areas" by buffering appropriate distance from the facility or program location to include the affected areas
4. Identify resident demographics in catchment areas
5. Benefit assessment — Determine demographics of block groups living closer to selected desirable facilities or those receiving higher DNRP services levels
6. Burden assessment — Determine demographics of block groups living closer to selected facilities or receiving lower levels of DNRP services
7. Compare demographics of those in "catchment areas" with countywide averages
8. Summarize and map the findings
9. Identify if degree of disproportionality is significant enough to warrant a program response

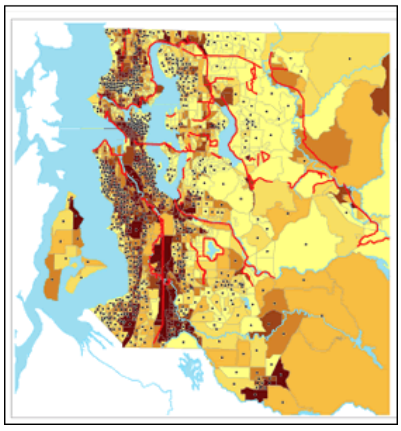
Scope of Initial Assessment

The following topics have been mapped or are proposed for mapping in early '08:

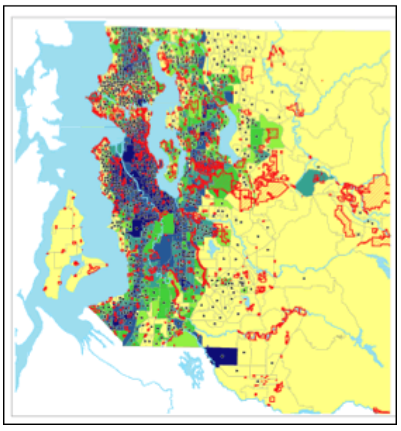
1. Parks and Recreation Division—regional trail access, open space and park distribution.
2. Wastewater Treatment Division—location of wastewater conveyance facilities and treatment plants.
3. Solid Waste Division—locations of transfer stations, WasteMobile stops, Take-It-Back Network participants
4. Water and Land Resources Division—locations of drainage complaints and technical assist visits

Below are maps and charts that help present the findings from this effort. Please contact **richard.gelb@kingcounty.gov** with follow-up questions on methods or results.

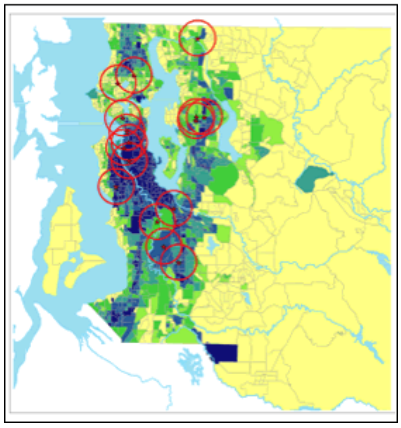
Income Demographics and Distance to Regional Trails in King County



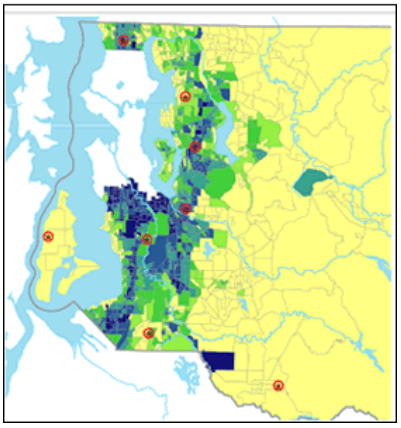
Minority Demographics and distance to Developed Parks in King County



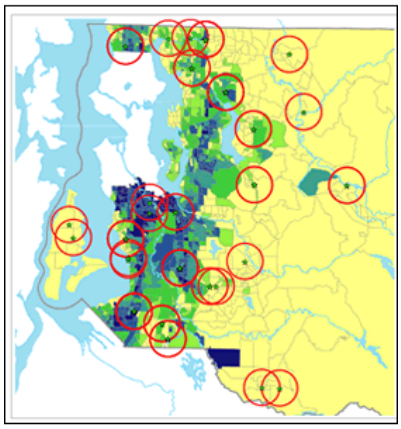
Minority Demographics and 2 Mile Buffer from Take It Back Store Location



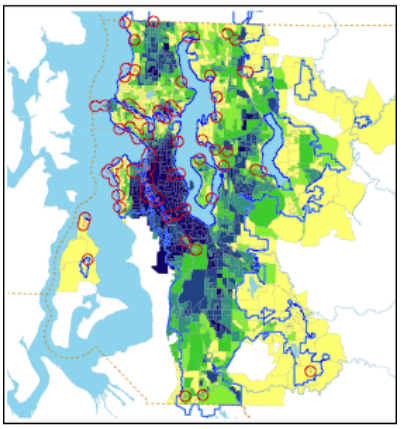
Minority Demographics and 1/2 Mile Buffer from Transfer Station



Minority Demographics and 2 Mile Buffer from Wastemobile Stops

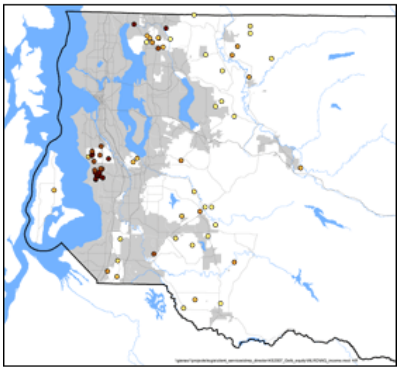


Minority Demographics and King County Wastewater Facility Locations



Income Demographics and 2 Mile Buffer from Take It Back Store Location

Water Quality Audits By Income



DNRP VISION MISSION AND GOALS

DNRP - Vision, Mission and Goals and Performance Management Principle

Vision

Sustainable and livable communities — Clean and healthy natural environment.

Mission

Foster environmental stewardship and strengthen communities by providing regional parks, protecting the region's water, air, land and natural habitats, and reducing, safely disposing of and creating resources from wastewater and solid waste.

Goals:

1. **Environment:** Minimize waste and emissions, maximize resource re-use and recovery, and protect and restore habitats, ecological functions and aquatic conditions.

2. **People and Communities:** Protect and improve human health, safety, and wellness — minimize hazards (including toxic exposures and flood risk), maximize opportunities for community building and fitness, build internal capacity for excellence in service delivery.

3. **Fiscal Responsibility and Economic Vitality:** Support King County's economic development goals and ensure ratepayer value through effective, efficient and equitable program implementation.

Performance management guiding principle:

Effectiveness, efficiency, and equity measures across 3 domains (environment, people/community, and fiscal/economic) that are cohesive, aligned, and integrated throughout the organization.

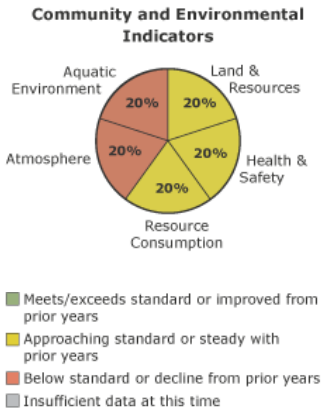
COMMUNITY AND ENVIRONMENTAL INDICATORS

TY AND ENVIRONMENTAL INDICATORS

e measures of environmental conditions, while performance measures show how DNRP is doing at improving these conditions.

In practice, however, there is not always a clear line between measures that are environmental indicators and those that are measuring our agency's performance.

DNRP distinguishes between environmental indicators and performance measures based on the degree of our influence — measures that have many contributing factors are included as indicators, while measures that are strongly influenced by DNRP policies, programs, and practices are considered performance measures.



Indicators

DNRP KingStat environmental indicators are summarized in five groups:

- **Aquatic Environment**
- **Land & Resources**
- **Health & Safety**
- **Resource Consumption**
- **Climate Change**

The pie chart at the top of each indicator page provides a high-level summary of that indicator's condition. Readers will find more detailed information on environmental conditions by reviewing the various component measures, while information on how the data is collected can be found at the bottom of the page in "Technical Notes."

Information about these environmental indicators use a simple red/yellow/green/gray designation, where:

- Green signifies meeting or exceeding an adopted standard, a stated goal, or improved from prior years;
- Yellow signifies approaching to within 10 percent of an adopted standard, stated goal or has remained steady with prior years;
- Red signifies being below the standard or goal, or declining from prior years; and
- Gray signifies insufficient data at this time.

WHAT CAN YOU DO?

At Home

Puget Sound Shoreline Stewardship Guidebook

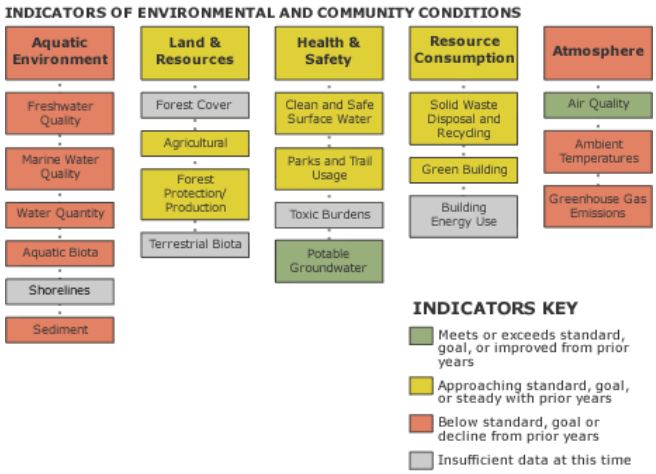
Embrace Natural Yard Care

Related Information

DNRP Budget And Organization Chart

King County Ecological Lands

DNRP 2011 INDICATORS



Download PDF version of KingStat Indicators site-map 68Kb

Back to top

We welcome your feedback and suggestions to improve this site, such as:

- Other reliable environmental data sources for King County
- Adjustments to the weightings for indicators and performance measures
- Mistakes to fix

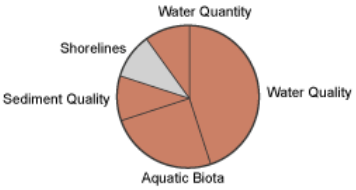
Share your thoughts by sending an e-mail to Richard Gelb, DNRP Performance Measurement Lead, at **richard.gelb@kingcounty.gov** so your input can be considered for subsequent updates.

INDICATORS

ENT

2011 Rating:

Aquatic Environment Components



- Meets/exceeds standard or improved from prior years
- Approaching standard or steady with prior years
- Below standard or decline from prior years
- Insufficient data at this time

King County's Aquatic Environment Index includes information about the conditions of water quality, aquatic biota, shorelines, water quantity, and sediment quality. Our weighting system for overall aquatic environment condition includes:

- 45 percent water quality
- 25 percent aquatic biota
- 10 percent water quantity
- 10 percent shorelines, and
- 10 percent sediment quality

Status

Overall, conditions are below standard, with a few areas of lesser concern.

Influencing factors

Over the past two centuries, increased population and development have substantially altered King County's landscape. Less forests and natural land cover increase the need for engineered stormwater controls and reduce the amount of habitat for animal and plant species. Development and deteriorating water quality impact wildlife habitat — particularly the amounts of hard or paved surfaces, loss of tree cover and other changes to natural environments. Phosphorus from blended stormwater and wastewater that bypasses the treatment process during significant storm events, failing septic systems, pet wastes and water bird droppings reduce dissolved oxygen levels and increase water temperatures. Marine habitat quality is reduced by non-point source pollution, contaminated sediments and the high percentage of shoreline that has been armored with bulkheads and other structures.

What you can do

- Reduce your driving and reliance on cars -- drippings and exhaust from vehicles and run-off from roads and parking lots are primary contributors of water quality declines.
- Properly dispose of harmful chemicals, including unused pharmaceuticals and latex paints, instead of pouring them down the drain or allowing them to run off on the ground.
- Minimize the use of fertilizers and pesticides by practicing natural yard care.
- Wash your car on the grass or gravel instead of on the street or driveway, or take it to a car wash.
- Properly dispose of or manage pet and livestock wastes.
- Consider alternatives to bulkheads and other artificial barriers to marine shorelines.
- Plant trees and reduce impervious surfaces by using pervious pavers in drive and walkways.
- Encourage your local city or town to make tree protection regulations stronger.
- Contact your elected officials and express how important wildlife protections are to you—including salmon restoration.

More information about King County's Aquatic Environment Index is available by continuing to the following links for these measures:

More information about King County's Freshwater and Marine Water Quality is available by continuing below for these

WHAT CAN YOU DO?

At Home

Puget Sound Shoreline Stewardship Guidebook

Shoreline Practices for a Healthy Lake, River or Stream

Duwamish River Cleanup Coalition

At Work

Reduce your runoff, get a fee discount

Learn Best Practices to reduce Stormwater Pollution

Understand Industrial Waste Discharge Limits

Related Information

DNRP Budget And Organization Chart

Puget Sound Marine Topics

Puget Sound Watershed

Vashon Island Environmental Information

Puget Sound Partnership Recommendations

EPA: Lower Duwamish Watershed

Scientists Concerned For Puget Sound

A Comprehensive Assessment of the

measures:

- **Water Quality - Freshwater Environment**
- **Water Quality - Marine Environment**
- **Aquatic Biota**
- **Water Quantity**
- **Shorelines**
- **Sediment Quality**

Back to top

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Central Puget Sound Nearshore Ecosystem

INDICATORS

FRESHWATER WATER QUALITY

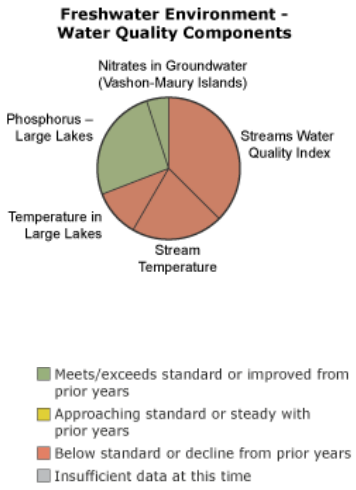
2011 Rating: ⇔

Freshwater Environment

About this indicator: King County's Freshwater Water Quality Index is derived from two main groupings of results describing the conditions of lakes and rivers & streams. Wetland conditions do not factor into the index at this time because of inadequate data. Due to the budget cuts, several indicators in this index have been removed from data collection in 2010 and possibly future years.

Status: Overall below standard, though with some areas of lesser concern.

Influencing factors: The impacts of development, landowner practices in areas close to the shoreline and pollutants are the dominant drivers determining the health of freshwater bodies in King County. Less forest cover and increases in impervious surfaces result in higher stream temperatures and more urban runoff. Phosphorus from blended stormwater and wastewater that bypasses the treatment process during significant storm events, failing septic systems, pet wastes and water bird droppings reduce dissolved oxygen levels and increase water temperatures.



What you can do:

- Properly dispose of unused pharmaceuticals, harmful chemicals and paints, instead of pouring them down the drain or allowing them to run off on the ground.
- Minimize the use of fertilizers and pesticides by practicing natural yard care.
- Wash your car on the grass or gravel instead of on the street or driveway, or take it to a car wash.
- Properly dispose of or manage pet and livestock wastes.

More information about King County's Freshwater water quality is available by continuing below for these measures:

- **Phosphorus in Large Lakes**
- **Temperature in Large Lakes**
- **Stream Temperature**
- **Streams Water Quality Index**
- **Nitrates in Groundwater on Vashon-Maury Islands**

Phosphorus in Large Lakes

WHAT CAN YOU DO?

At Home

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Understand Industrial Waste Discharge Limits

Related Information

Puget Sound Marine Topics

Puget Sound Watershed

Vashon Island Environmental Information

King County marine research vessel "Liberty"

Hood Canal Marine Life Struggling for Oxygen

Lower Duwamish Watershed

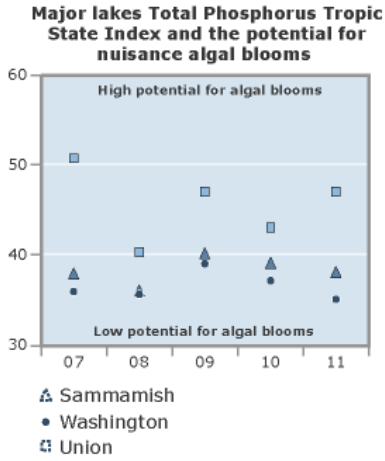
Marine Benthic Invertebrate Communities Near King County Wastewater Outfalls

Water and Land Resources Division

About this measure: The people of King County have made significant investments in water quality improvement and protection to lakes Washington, Sammamish and Union beginning with the diversion of wastewater effluent out of Lake Washington and Lake Sammamish in 1968.

Water quality improvements continue with efforts to:

- Reduce the discharge of combined sewer overflows
- Improve King County's wastewater treatment system (including construction of Brightwater treatment facility)
- Expand effluent reuse programs



These gains in water quality are constantly threatened by increasing amounts of phosphorus entering the watersheds as a result of increased development.

Status: Lake water quality results vary annually, depending on the climate effects and biological interactions that combine to create unique conditions in each lake annually. For example, the 1994-2011 results for Lake Sammamish show phosphorus concentrations fluctuated between low to moderate productivity from year to year, indicating water quality varies from good to moderate with low potential for nuisance algal blooms. For the past 12 years phosphorus concentrations in Lake Washington have remained low indicating a low potential for nuisance algal blooms. Lake Union typically has phosphorus concentrations within the moderate water quality range, with the exception of 2007. In 2007 high phosphorus levels put Lake Union in the poor water quality range. Overall the Total Phosphorus - Trophic State Index scores for Lakes Washington and Sammamish, appear to be somewhat lower in recent years.

Lake Sammamish is the only one of the three lakes with an approved management plan that includes designated water quality goals. The plan calls for an annual volume weighted total phosphorus concentration (VWTP) of 22 µg/L or less. Water from both the north and south lake stations met this goal in 2010 with a VWTP of 11 µg/L and 10 µg/L, respectively.

Influencing factors: In this region, phosphorus is most often the nutrient that promotes algal growth in freshwater. The more phosphorus that can be stopped from entering lakes, the less chance that a potentially toxic cyanobacteria bloom will occur. Phosphorus can be managed through well-designed drainage systems, maintenance of sewer infrastructure, changing homeowner and business behaviors (to use no phosphorus fertilizers on lawns), education and incentives, and replacing watershed septic systems with sewers.

Existing DNRP response: King County will continue to monitor these lakes as part of its ongoing Major Lakes Ambient Monitoring Program. This program is designed to track how lakes respond over time to various activities and inputs from the watersheds through influent streams, lake nutrient cycles, ecological interactions, and seasonal or year-to-year variability in weather. The goal of 100 percent of the three major lakes being within the range of moderate to low risk of potential algal blooms was met in 2011. If the lakes begin to show serious deterioration in terms of their beneficial uses, actions will be taken to further investigate causes and plans will be made.

Priority new actions: In 2011 Washington State signed the "Clean Fertilizers, Healthier Lakes and Rivers" legislation (ESHB 1489) into law. The legislation manages the sale of phosphorus in fertilizers and provides a commonsense and cost effective approach to making sure that our lakes and rivers are clean.

Technical Notes for Phosphorus in Large Lakes:

For definitions and more detail.

Temperature in Large Lakes

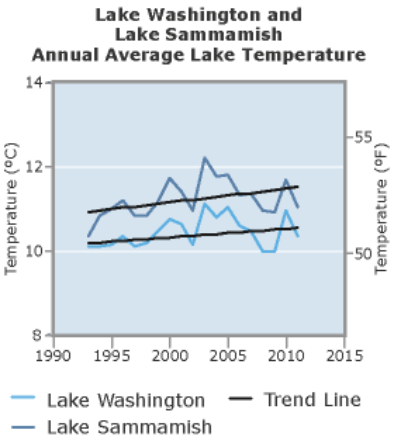
About this measure: This indicator is the trend in annual volume-weighted average temperature of Lake Washington and Lake Sammamish (1993-2011). This indicator is chosen as a proxy to track the impact of climate change (natural variability and human-induced global warming) on the two largest lakes in King County.

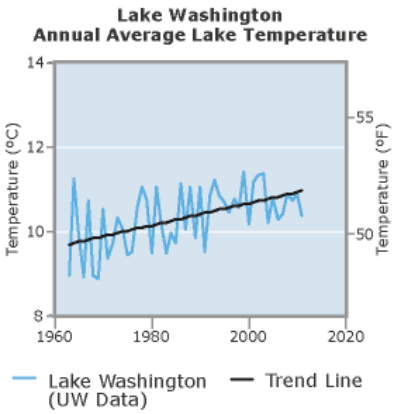
Status: Annual average temperatures of Lake Washington and Lake Sammamish vary from year to year depending on changes in weather, particularly to changes in the regional air temperature (Mean Annual Temperature in the Atmosphere section).

The trend in annual average lake temperature is toward higher average water temperatures in both lakes — an average of approximately 0.25^{o}C per decade (0.45^{o}F per decade). However, the observed trend is not statistically significant. This is

Marine Water Technical Reports

primarily due to the large inter-annual variability in average lake temperature and the length of the records available to detect a statistically significant trend. Statistical analysis of temperature data for Lake Washington from 1963 to 2011 provided by the University of Washington collected as part of a long-term lake ecology study indicates a similar long-term increase in annual average lake temperature which is statistically significant.





Influencing factors: The water temperature of these two large lakes is influenced by regional climate, which in turn is influenced by global climate variability and change. Studies of long-term changes in the temperatures of large lakes throughout the world have detected the influence of human-caused warming of the atmosphere superimposed on regional scale variability. Climate variability in this region is strongly influenced by variation in Pacific Ocean circulation. Two measures of this variability that differ in the time-scales of their influence are the El Nino Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). ENSO varies from warm to cool phases on the scale of years, while PDO varies on a decadal scale.

Some of the observed long-term warming of Lake Washington and Lake Sammamish is likely due to PDO variability, which shifted from a cool to a warm phase in 1976-1977 and may be returning to a cool phase. Without long term temperature monitoring of the kind performed by the University of Washington and King County, it will not be possible to separate the influence of natural variability from the effects of human-induced global warming on these lakes. Research has also shown that the effect of climate variability and change is not limited to lake temperature, but includes ecological changes that result from shifts in the timing of the onset of lake thermal stratification — the processes that lead to warmer lake water generally also lead to earlier thermal stratification of these lakes.

Existing DNRP response: King County will continue to monitor these lakes as part of its ongoing Major Lakes Ambient Monitoring Program. This program is designed to track how lakes respond over time to various activities and inputs from the watersheds through influent streams, lake nutrient cycles, ecological interactions, and seasonal or year-to-year variability in weather. Improved understanding of the influence of climate variability and change on lake quality will help separate changes caused by watershed activities from the influence of climate.

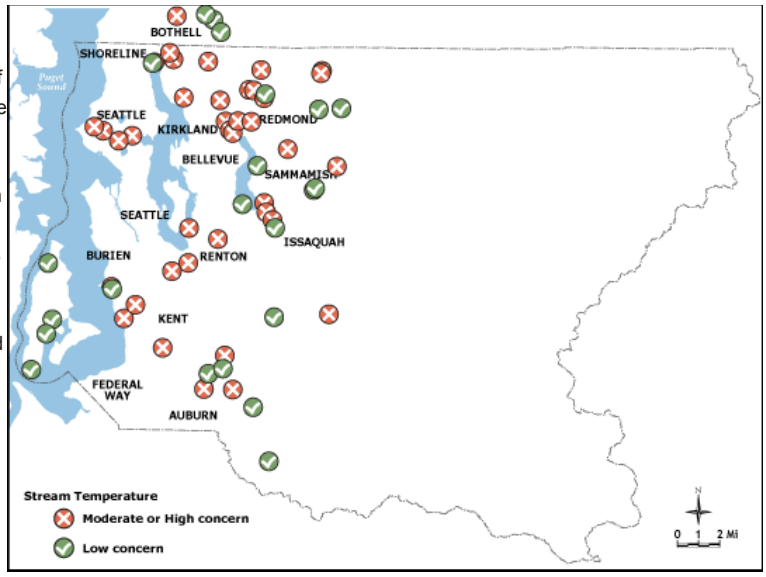
Priority new actions: King County is collaborating with the Global Lake Ecological Observatory Network (GLEON) to support the development of a scalable, persistent network of lake ecological observations.

Technical Notes for Temperature in Large Lakes:

For definitions and more detail.

Stream Temperature

About this indicator: This indicator is based on the stream temperature standards established by the state of Washington. The stream temperature standards were established for the protection of designated beneficial uses — particularly for the protection of freshwater spawning, rearing and migration habitat for salmon. For this particular indicator, the focus is on the moving average of the daily maximum stream temperature based on continuous (every 15 minutes) observations of stream temperature conducted at routine monitoring locations by King County, the U.S Geological Survey and the Seattle District of the U.S. Army Corps of Engineers.



While observed exceedances of the stream temperature standard suggest impairment of designated uses, the Washington State Department of Ecology makes this determination under the Clean Water Act Sections 303(d) and 305(b) based on data collected by Ecology and additional data submitted by others. The result of Ecology's assessment includes placement of stream segments in one of five categories that range from Category 1 (meets standards) to Category 5 (polluted waters that require a Water Cleanup Plan — also known as a Total Maximum Daily Load (TMDL). Stream temperature TMDLs typically include the collection of additional data and the development of a stream temperature model to establish the magnitude of impairment relative to an idealized condition where riparian vegetation (and sometimes other factors) is restored to its maximum historic potential. King County has submitted historical temperature data to Ecology for their current (2012) freshwater quality assessment and 303(d) list which will be submitted to the Environmental Protection Agency for approval.

Status: Continuous temperature data from 63 stream and river sites in King County were measured and the moving 7-day average of the daily maximum temperature was calculated for 2011 and all other years for which data were available going back as far as 2000.

This indicator suggests that many streams and rivers throughout the county exceed the 16°C standard established for the protection of core summer salmonid habitat, with the exception of a few streams found in rural areas and less developed areas within the urban growth boundary.

A stream temperature TMDL has been completed for the Bear-Evans Creek Basin, Newaukum Creek, the mainstem Green River below Howard Hanson Dam and the Snoqualmie River; and a temperature TMDL is under development for the Soos Creek Basin.

Influencing factors: Extensive development can substantially alter the extent of riparian shade that moderates daily peak stream temperatures. Development can also alter summer low flows through reduced groundwater recharge from impervious areas and by water management activities within the basin such as groundwater extraction and export via potable water supply and regional wastewater conveyance systems. Development induced increases in high flows combined with the loss of riparian tree cover can also cause the stream to become wider and shallower, which also contributes to higher peak stream temperatures. Climate change, particularly predicted increases in air temperature are expected to result in warmer stream conditions without substantial investment in restoring riparian shade and summer flow conditions.

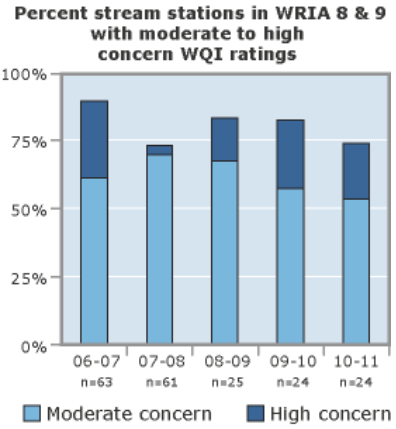
Existing DNRP response: King County has a range of regulatory, educational, and on-the-ground programs to reduce the impacts of development on streams and protect and restore riparian vegetation. More attention is also being paid to how development and basin water management activities affect summer stream flow and approaches are being explored to restore and improve flows in streams where historical flow declines have been observed.

Priority new actions: The potential extent of impairment of streams for the designated use as core summer salmon habitat highlights the need for a more comprehensive and coordinated approach to identifying stream reaches that would most benefit from measures such as riparian shade restoration and improved summer stream flows. As noted in the Streams Water Quality Index, King County will work with Ecology, Puget Sound Partnership, and other regional stakeholders to advocate a regional scale water quality assessment, cleanup planning and implementation effort.

Technical notes for Stream Temperature

For definitions and more detail.

Streams Water Quality Index



About this indicator: King County's Streams Water Quality Index (WQI) integrates key factors into a single number that can be compared over time and across locations. This index compares monthly temperature, pH, fecal coliform bacteria, dissolved oxygen, turbidity, total suspended solids, and nutrients (phosphorus and nitrogen) relative to state standards and guidelines. This index was originally based on the Oregon Water Quality Index and work by the Washington Department of Ecology. In 2009, Ecology modified the WQI to reflect revised state water quality rules for the protection of native fish and aquatic resources. In addition to modifications for revised state criteria, the WQI was further modified in 2009 by Ecology to more directly reflect conditions in Puget Sound lowland streams. For purposes of year-to-year comparison, results from previous years were recalculated using the new Puget Sound Lowland Stream WQI.

Due to budget cuts, the Stream and River Monitoring Program was significantly reduced in 2009 from 63 sites on three rivers and twenty-eight streams to 24 sites on three rivers and eighteen streams. Four of these 24 stream sites are Vashon Island streams that are monitored through funding sources not associated with the Ambient Stream and River Monitoring Program. The Stream and River Monitoring Program now targets major rivers and streams that will best characterize potential sources of pollutant loading to a major water body. The 2009 Ambient Stream and River Monitoring Program reductions represent a significant loss of a long-term data set for many stream stations that have been monitored since the inception of Metro's monitoring programs in the early 1970s.

Status: The 2010-11 WQI scores indicated that 75 percent of the 24 sampling sites were of moderate or high water quality concern (poor to moderate water quality) and 25 percent were rated of low concern (good water quality). All five sites rated "high concern" are in WRIA 8 (Thornton, Swamp, North, Lyon, and Juanita creeks), and all were affected by very high fecal coliform bacteria following record breaking rains in early November 2010. Additionally, all but Swamp Creek were affected by high phosphorus. Swamp, North, and Juanita scores were also affected by low dissolved oxygen.

Influencing factors: Overall stream water quality in King County is impacted by increased urbanization in our region — primarily stormwater runoff. Two of the 24 streams monitored had declining WQI scores compared with the previous year. Lyon and Swamp creeks WQI scores dropped from "moderate concern" to "high concern". Both of these creeks were impacted by rainfall events with high fecal coliform bacteria and turbidity following a record breaking rain event in November 2010.Four of the five streams with improved WQI scores are in WRIA 9. Newaukum and Springbrook creeks went from "high concern" to "moderate concern" while Soos Creek and the Green River site moved from "moderate concern" to "low concern". Pipers Creek also had an improved conditions going from the "high concern" rating in 2009-10 to "moderate concern" in 2010-11.

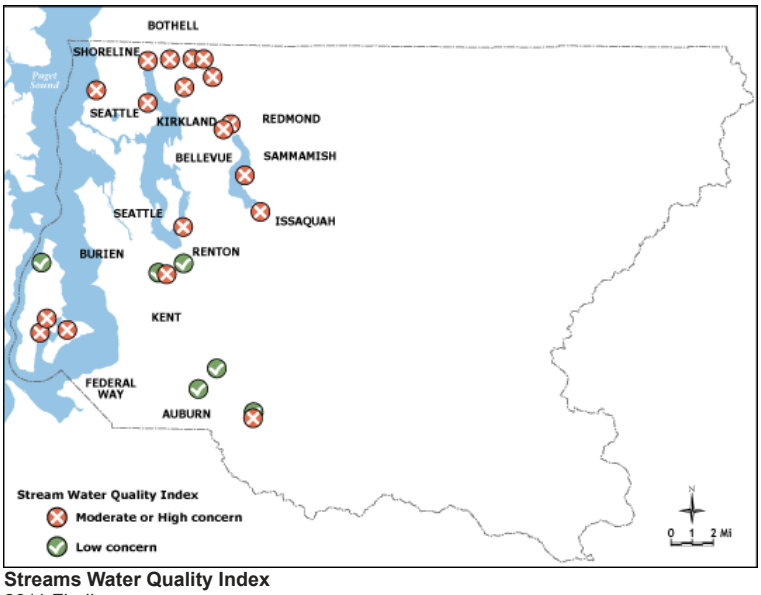
Stormwater, combined sewer overflows (CSO's), waterfowl and pet wastes are the most likely sources of bacteria in urban streams. Poor livestock manure management and failing septic systems can be a potential source of bacteria in agricultural and suburban areas. In wetlands, wildlife excrement and stagnant water conditions can lead to elevated bacteria counts. High phosphorus concentrations are found in fecal material and elevated concentrations are often linked to similar sources as bacteria. In addition, elevated phosphorus concentrations are linked to areas undergoing development primarily due to

erosion.

Low dissolved oxygen concentrations can be associated with low flows, wetlands, high temperatures (colder water holds more oxygen), and high levels of organic matter (bacteria use up oxygen in the process of decomposing).

Existing DNRP response: King County is responsible for preserving water quality and preventing and repairing damage to its waterways and water bodies. Attention is given to high concern sites to improve water quality. This can involve properly maintaining facilities, constructing or engineering solutions, identifying where or how pollutants are entering the stream, and/or educating adjacent property owners about the impacts of pesticides and fertilizers on streams.

Priority new actions: Results from 2010-11 King County's Streams Water Quality Index highlight the need for a comprehensive and coordinated approach to resolving in-stream flow management, since lower summer flows and increased stormwater runoff inflate every water quality measurement of the index. In 2011, King County worked with local jurisdictions and Washington State Department of Ecology on in-depth bacterial investigations for Issaquah, Idylwood, Juanita, and Boise creeks. In 2012, efforts will be focused on further identifying sources in Juanita, Idylwood, and Boise creek basins. King County will work with the Puget Sound Partnership to advocate a coordinated effort in the planning at a regional scale.



Streams Water Quality Index
2011 Findings
Click to download the PDF version.

Technical notes for Streams Water Quality Index

For definitions and more detail.

Nitrates in Groundwater on Vashon-Maury Islands

About this indicator: King County has been tracking groundwater quality on Vashon-Maury Island since 2001. Nitrate is used to track groundwater quality because it is a good indicator of changes caused by human activities, such as land-use development. King County's goal is to ensure high water quality through effective land-use and on-site septic regulations.

The groundwater quality indicator uses a nitrate index, defined as the maximum concentration of the annual sampling results divided by the maximum contaminant level (MCL) of Nitrate (10 mg/L). This method yields one number. The closer this index gets to 1 (or over 1) the greater concern. The nitrate index for 2011 is below 0.5 with a value of 0.36. The nitrate index has been improving since 2009.

Status: Of the 25 well/spring sites monitored, all have tested below the

drinking water standard (Maximum Contaminant Level, MCL of 10 mg/L) and all are less than 5 mg per liter of nitrate present. Less than half the sites tested have seen above average nitrate increases since testing began.

Influencing factors: Poor drainage systems, improperly maintained septic systems and improper fertilizer use can increase nitrate levels.

Existing DNRP response: King County plans to continue monitoring Vashon's wells and springs annually for nitrate concentrations.

Priority new actions: Additional locations have been sought to increase our understanding of island aquifers. King County intends to produce Vashon-Maury Island-wide water table, contour maps with seasonal variability that will be reported every year.

Technical notes for Nitrates in Groundwater on Vashon-Maury Islands

For definitions and more detail.

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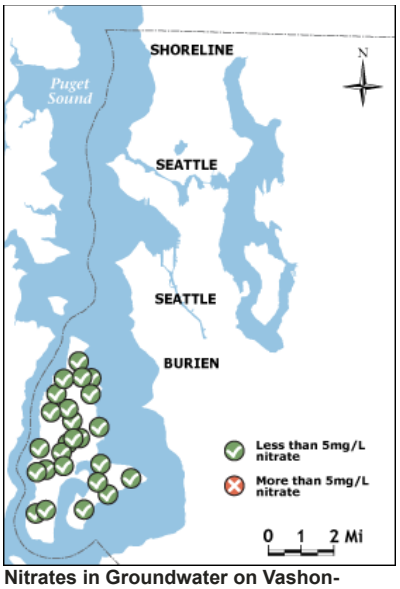
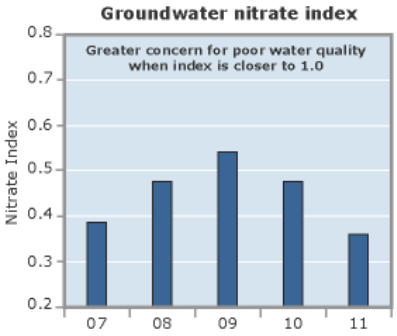


Nitrates in Groundwater on Vashon-Maury Islands
2011 Findings



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- Adjustments to the weightings for indicators and performance measures
- Mistakes to fix

Share your thoughts by sending an e-mail to Richard Gelb, DNRP Performance Measurement Lead, at **richard.gelb@kingcounty.gov** so your input can be considered for subsequent updates.

INDICATORS

MARINE WATER QUALITY

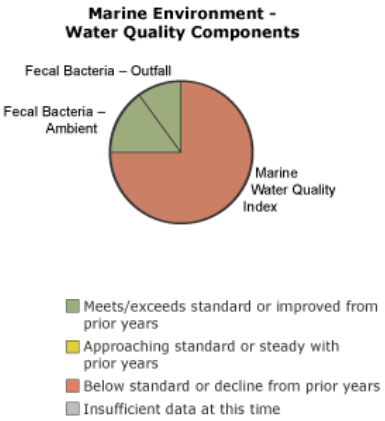
2011 Rating:

Marine Environment

About this indicator: King County's Marine Water Quality includes information about the conditions of marine waters.

Status: While, in general, the quality of open waters in Puget Sound is fair, marine water quality conditions in certain areas of King County show evidence of degradation. Waters that are in protected areas without much current are of concern.

Influencing factors: Stormwater carrying nutrients from septic systems, chemicals from motor vehicles and nitrogen from fertilizers degrade marine water quality and reduce oxygen levels for the animals that live and depend on Puget Sound habitats.



What you can do:

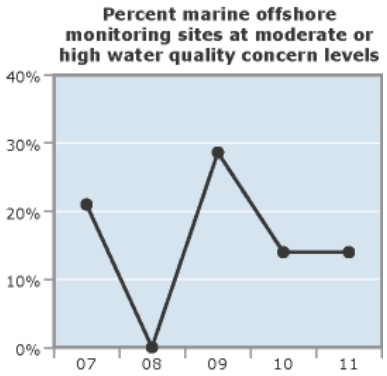
- Properly dispose of harmful chemicals, including unused pharmaceuticals and latex paints.
- Maintain, repair, or replace failing private septic systems.
- Minimize the use of fertilizers and pesticides by practicing natural yard care.
- Wash your car on the grass or gravel instead of on the street or driveway, or take it to a car wash.
- Properly dispose of pet waste

More information about King County's marine waters is available by continuing below for these measures:

- **Marine Water Quality Index**
- **Fecal Bacteria in Offshore Marine Waters (ambient and outfall)**

Marine Water Quality Index

About this indicator: King County conducts monthly water quality monitoring at 14 offshore locations in Puget Sound, which includes 7 stations located at wastewater treatment plant and CSO outfall pipes. Offshore marine waters in King County are monitored for temperature, salinity, density, dissolved oxygen, light transmittance, nutrients, and chlorophyll. These variables can be used to assess eutrophication, (the process by which dissolved oxygen concentrations are depressed due to algae growth primarily caused by nutrients), sewage waste (ammonia), food availability to secondary producers (chlorophyll), and marine water habitat quality (dissolved oxygen, temperature, salinity).



Status: 2011 findings indicate that the water quality at 12 stations is at a low level of concern. These same 12 stations were also at a low level of concern in 2010. The two stations in Quartermaster Harbor were at a high level of concern in both 2009 and 2010. For 2011, the station in the inner harbor received a moderate level of concern ranking due to low dissolved oxygen values and three consecutive months of low dissolved inorganic nitrogen (DIN). The station in the middle harbor in 2011 again received a high level of concern ranking due to low dissolved oxygen values and six consecutive months of low DIN. These two Quartermaster Harbor sites are currently

WHAT CAN YOU DO?

At Home

Puget Sound Shoreline Stewardship Guidebook

Shoreline Practices for a Healthy Lake, River or Stream

At Work

Reduce your runoff, get a fee discount

Learn Best Practices to reduce Stormwater Pollution

Understand Industrial Waste Discharge Limits

Related Information

Puget Sound Marine Topics

Puget Sound Watershed

Vashon Island Environmental Information

King County marine research vessel "Liberty"

Hood Canal Marine Life Struggling for Oxygen

Lower Duwamish Watershed

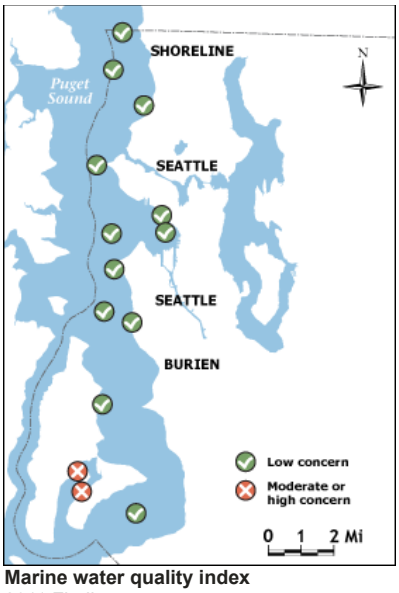
Marine Benthic Invertebrate Communities Near King County Wastewater Outfalls

Water and Land Resources Division

monitored with in situ water quality monitoring equipment due to the high level of concern for these waters.

The percentage of stations of Moderate or High Concern is 14.3%, which is the same as 2010 and a decrease from 2009 (28.6%).

Influencing factors: Vertical water density patterns can be indicators of an area's potential sensitivity to developing low dissolved oxygen conditions. Low oxygen conditions are harmful to fish and other aquatic life and may occur as a result of the natural flow of low oxygenated Pacific Ocean water into the deep main basin of Puget Sound, in addition to processes such as eutrophication. Persistently low nitrate concentrations in surface water can indicate a potential sensitivity to nutrient-rich input such as stormwater runoff, industrial waste discharges, septic systems, and flow from rivers. Ammonia can be found at elevated concentrations as a byproduct of sewage, agricultural practices, and fertilizer use in urban areas.



Marine water quality index
2011 Findings

Existing DNRP response: DNRP will continue to operate its wastewater treatment plants and conveyance system effectively to maintain low levels of nutrients discharged into marine waters. The new Brightwater Treatment System will use state of the art technology to reduce nutrients and other pollutants. King County, along with other monitoring partners, is currently involved in a four-year study to assess the role of nitrogen, if any, on dissolved oxygen levels in Quartermaster Harbor. Nutrient levels are also addressed by the agency through stormwater control management practices. Additionally, DNRP will continue to play an active role in the Puget Sound Partnership toward improving water quality throughout the entire Puget Sound.

Priority new actions: Stratification intensity and its persistence is beyond King County's influence, but should be monitored as it is an important indicator of areas sensitive to possible water quality problems.

Technical notes for Marine Water Quality Index

For definitions and more detail.

Fecal Bacteria in Offshore Marine Waters (ambient and outfall)

About this indicator: The presence of fecal bacteria in water bodies indicates contamination with the fecal material of humans, birds, or other warm-blooded animals. Although these bacteria are usually not harmful themselves, they often occur in conjunction with other disease-causing pathogens, and their presence at high levels indicates an increased possibility that people might get sick if they come into contact with the water.

Washington State has a marine surface water quality bacteria standard based upon fecal coliforms. This standard was derived for the protection of human health and addresses water quality requirements for both primary contact recreational uses (e.g. swimming and SCUBA diving) as well as the consumption of shellfish. This fecal coliform standard is a geometric mean of **14 colony forming units /100ml**, calculated over a 12-month sampling period.

King County conducted monthly water quality monitoring in 2011 at 14 offshore locations in Puget Sound. Offshore monitoring locations are divided into two categories, ambient and outfall stations. Ambient stations are chosen to reflect general, or ambient, environmental conditions, while outfall stations are located at King County wastewater treatment plant outfalls and county-operated combined sewer overflow outfalls. Monitoring occurred at seven outfall stations and seven ambient stations in 2011. Ambient stations were located in the Central Basin of Puget Sound as well as Elliott Bay and Quartermaster Harbor.

The status of this indicator is based upon the geometric mean of the fecal coliform bacteria counts over the 12-month period of calendar year 2011 in samples collected from 14 monitoring stations at a depth of one meter below the surface.

Status: All ambient and outfall stations met the fecal coliform bacteria geometric mean standard in 2011. Fecal coliform bacteria counts do not appear to be an ongoing concern in offshore surface marine waters within King County.

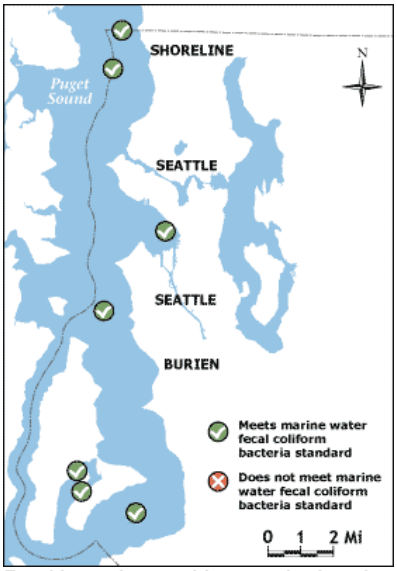
Influencing factors: Fecal coliform bacteria can enter Puget Sound from domestic animals, wildlife, storm water runoff, wastewater discharges, and failing septic systems. Non-point source pollution (e.g. storm water runoff and agriculture) is the major cause of marine water bacterial contamination.

Existing DNRP response: DNRP will continue to manage its wastewater treatment plants and conveyance system

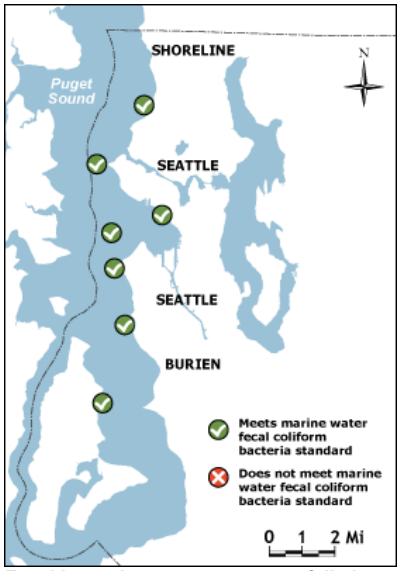
Marine Water Technical Reports

effectively. The county is working with the Puget Sound Partnership effort toward protecting and restoring the health of marine waters.

Priority new actions: No major changes to the offshore marine water quality monitoring program are planned for 2012.



Fecal bacteria at ambient monitoring sites
2011 Findings
Click to download the PDF version.



Fecal bacteria at wastewater outfall sites
2011 Findings
Click to download the PDF version.

Technical notes for Fecal Bacteria in offshore Marine Waters

For definitions and more detail.

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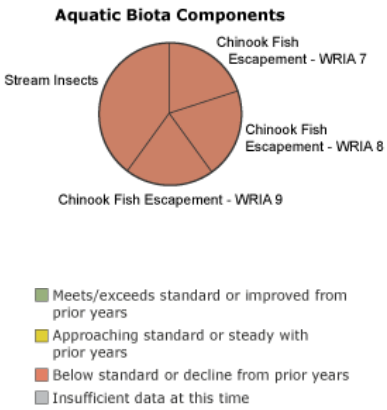
INDICATORS

AQUATIC BIOTA

2011 Rating:

About this indicator: King County's Aquatic Biota Index is derived from two main groupings of results regarding numbers of fish and stream insects. Chinook salmon are the only fish reflected in this category. Other fish species should be included in the assessment of aquatic biota health, but there is no consistently collected data regarding these animals in King County.



Status: Information gathered over the last 100 years indicates an overall decline in the health of native, naturally spawning salmon populations in Puget Sound watersheds.

Influencing factors: Development and deteriorating water quality impact wildlife habitat — particularly the amounts of hard or paved surfaces, loss of tree cover and other changes to natural environments.

What you can do:

- Plant trees and reduce impervious surfaces by using pervious pavers in drive and walkways.
- Encourage your local city or town to make tree protection regulations stronger.
- Contact your elected officials and express how important wildlife protections are to you—including salmon restoration.

More information about King County's Fish and Stream Insects is available by continuing below for these measures:

- **Chinook Salmon**
- **Stream Insect Health**

WHAT CAN YOU DO?

At Home

Embrace Natural Yard Care

Home & garden hints for healthy streams & salmon

At Work

Apply Integrated Pest Management in your landscaping

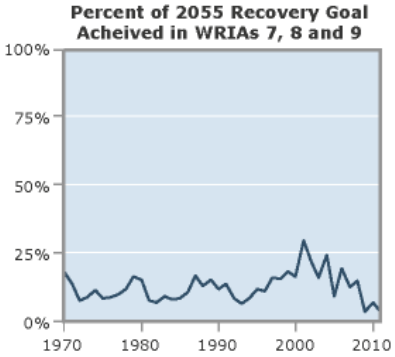
Related Information

Stream Bug monitoring

Shoreline Ecological Characterization

Chinook Salmon

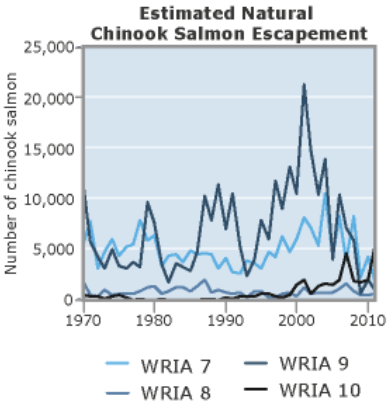
About this indicator: Salmonid fishes native to King County include chinook, coho, sockeye/kokanee, pink and chum salmon, rainbow (including the anadromous form called "steelhead"), cutthroat, bull and dolly varden trout and pygmy and mountain whitefish. Each of these species has a diverse life history and relies upon a range of habitats for spawning, rearing, feeding and migration. They also have major cultural, economic and political roles in the Pacific Northwest. Of these, Chinook, Bull trout, and Steelhead have been listed for protection under the Endangered Species Act. Throughout much of Washington State, the harvest and hatchery propagation of these fish populations and to a lesser extent, their habitat, are co-managed by the State of Washington, through the Washington State Department of Fish and Wildlife (WA DFW), and the treaty Indian tribes.



King County includes all or portions of four major watersheds, which are denitified by Watershed Resource Inventory Areas (WRIA): the Snohomish (WRIA 7), Cedar/Lake Washington (WRIA 8), Green/Duwamish (WRIA 9) and Puyallup/White (WRIA 10). Although King County does not manage fish populations directly, it does have jurisdictional responsibility for many activities, including land-use regulation, which greatly influences the quantity, quality and distribution of salmon habitats.

Natural chinook salmon spawning ground escapement is the number of mature, adult chinook salmon that escape fisheries and return to their stream

of origin to spawn naturally. It is an indicator of the abundance of chinook salmon and can be used, along with other population indicators, to evaluate the overall health of marine and freshwater ecosystems.



Chinook salmon long-term recovery goals (recovery goals) were established to be reflective of characteristics of a viable salmon population[1]: abundance, geographic distribution, genetic and phenotypic diversity and productivity. These recovery goals were established for watersheds through the cooperative Puget Sound Shared Strategy process. The recovery goals to be targeted are 64,000 for WRIA 7, 12,200 for WRIA 8 and 27,000 for WRIA 9. There are no recovery goals for WRIA 10.

This indicator is based on the percent of natural chinook salmon escapement with respect to an adjusted annual recovery goal for each WRIA, where applicable. Our weighting system for this indicator is applied equally to WRIA 7, 8 and 9

Status: The fish counts for WRIAs 7, 8 and 9 have been on a decreasing trend since about 2000-2004. Natural variations are expected due to a wide variety of influencing factors. Overall, the natural chinook salmon escapement results in 2010 for each WRIA were far below the respective adjusted annual recovery goal and comprised of only 7 percent of the recovery target.

Influencing factors: Natural Chinook salmon escapement is related to the habitat and water quality of the County's rivers and streams, along with several other factors such as precipitation, hatcheries, biology, harvest, and flow management. Some annual variation in salmon returns is to be expected and is unrelated to local human influences. For example, natural cycles of ocean warming and cooling and longer term trends in climate can also greatly affect local salmonid productivity.

Existing DNRP response: Inter-jurisdictional, watershed-based salmon conservation plans have been completed for WRIA's 7, 8, 9 and 10. The plans were submitted to federal agencies for review in 2005, and accepted by the National Marine Fisheries Service in February 2006 with a few additions. The plans include actions for meeting long-term recovery goals. King County serves as the lead agency for two WRIA's and participates in the efforts and activities of all four. The county will continue its participation in the WRIA process and the larger, region wide Shared Strategy For Puget Sound process to secure funding for and implement the measures identified in these plans toward habitat improvement projects that should help to recover the species.

Priority new actions: King County is in the implementation phase for the WRIA 7, 8 and 9 Salmon Conservation and Habitat Plans.

[1] A viable salmon population is defined as one with a negligible risk of extinction in 100 years. Negligible has been taken to mean less than 5%.

Technical Notes for Chinook Salmon

For definitions and more detail.

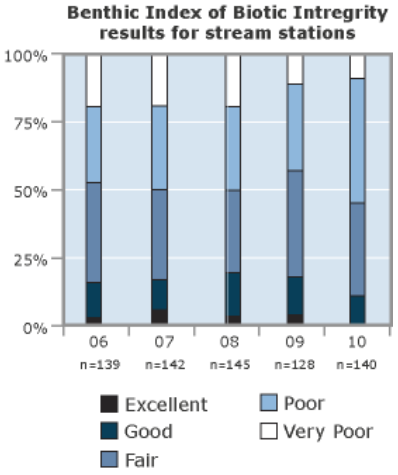
Stream Insect Health

About this indicator: King County collects benthic macroinvertebrates, commonly referred to as "stream bugs," from selected streams in the Lake Washington/Cedar Sammamish and Green/Duwamish watersheds to evaluate stream health.

Scientists use a scorecard system called the Benthic Index of Biotic Integrity (B-IBI) to measure stream health. The BIBI score is based on the type and number of stream bugs present in the stream. This scoring system allows comparison of different streams to each other and can also be used to classify the general ecological stream health.. The BIBI scoring system classifies sites as Excellent, Good, Fair, Poor or Very Poor.

Status: Samples are collected annually from approximately 125 - 150 locations (approx. 100 streams and tributaries) within 37 sub-basins across the Lake Washington/Cedar/Sammamish (WRIA 8) and Green/Duwamish (WRIA 9) watersheds. In 2011, samples were collected from 137 sites; these samples are currently being analyzed. Results for samples collected in 2010 are the most recent available data. When data from all sites (n=140) are combined and compared to previous years, a somewhat negative shift in stream health was observed in 2010. In 2010, no sites were classified as "Excellent", a decrease from past years when the percentage ranged from 1% in 2002 to 5.6% in 2007. In 2010, 44% of all sites were classified as

"Fair" or "Good"; a decrease when compared to 2009 when 53% were classified as "Fair" or "Good". The number of sites classified as "Very Poor" and "Poor" increased from 42% in 2009 to 56% in 2010. In 2010 approximately 59% (compared to 46% in 2009) of the sites in WRIA 8 and 57% (compared to 37% in 2008) of the sites in WRIA 9 were classified as "Very Poor" or "Poor".



Influencing factors: Development, pollutants in stormwater runoff, loss of forest cover, increases in impervious surface, elevated stream temperatures, increased siltation, increased frequency of peak flows, and invasive and non-native plants are a few factors that can influence stream macroinvertebrate populations. Property access and insufficient flows in streams during the sampling period can influence the number of sampling locations, affecting annual comparisons.

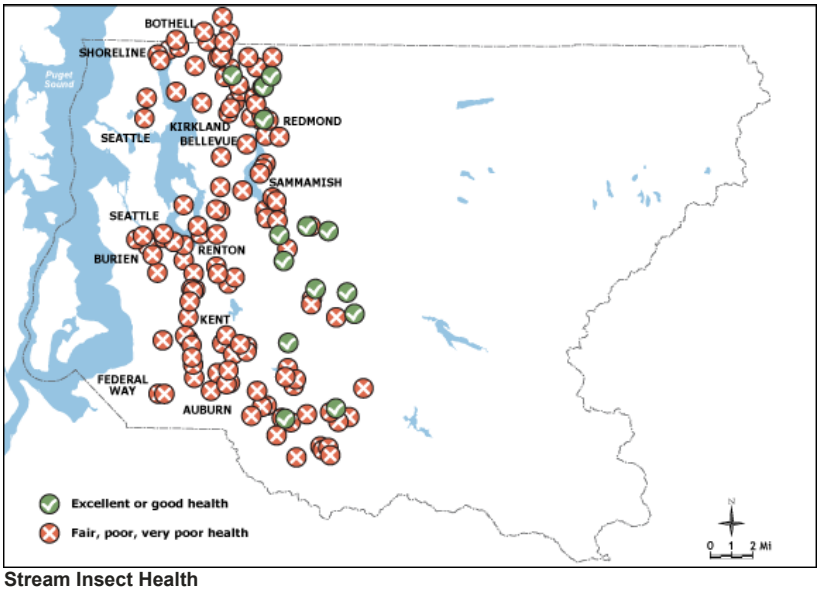
Existing DNRP response: WLRD continues to implement programs that focus on minimizing degradation of stream health associated with development and pollutant runoff, maintaining forest cover and its numerous stormwater benefits, or implementing watershed improvement projects. King County's Stormwater Program focuses on flow control to minimize adverse effects from development, provides surface water design standards for new development and inspects and maintains stormwater control facilities.

King County continues to work with landowners to restore streamside parcels that have important benefits as aquatic resources. In addition, WLRD's capital projects program builds small and large stream and wetland enhancement projects. Basin stewards work with the local community to respond to resident's inquiries for watershed protection, coordinate efforts among diverse public agencies and facilitate watershed project implementation. The Agriculture Program works with farmers and livestock owners to prevent agricultural pollutants from running off into streams and the Forestry Program works with landowners to help them effectively manage their property in a manner that protects stream health.

Priority new actions: Implementation of the county's Critical Areas Ordinance and federal total maximum daily load (TMDL) requirements for impaired water bodies are regulations that will also support water quality improvements in both incorporated and unincorporated areas.

Additional data and monitoring program details can be found at **http://www.pugetsoundstreambenthos.org**. This site includes the data summarized above, in addition to data for other benthic macroinvertebrate monitoring programs throughout the region.

In late 2010, King County received an Environmental Protection Agency Grant to enhance and standardize benthic macroinvertebrate monitoring tools for the Puget Sound Region. The grant will enhance collaboration and partnerships throughout the region and ultimately improve the ability to evaluate regional trends in stream health.



Stream Insect Health
2010 Findings
Click to download the PDF version.

Technical Notes for Stream Insect Health

For definitions and more detail.

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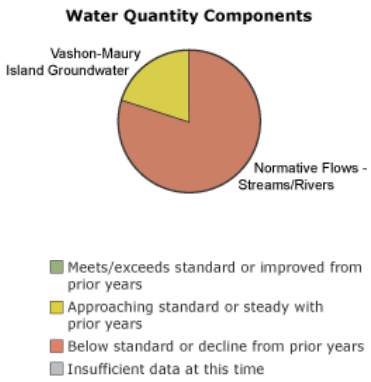
INDICATORS

WATER QUANTITY

2011 Rating:



About this indicator: King County's Water Quantity Index is derived from two main groupings of freshwater results describing the conditions of rivers and streams and groundwater. Lakes and wetlands do not factor into the index at this time. Our weighting system applies 80 percent to rivers and streams and 20 percent to groundwater condition results toward the overall water quantity rating. The weighting of groundwater quantity would be larger if data for groundwater well water levels for other areas besides Vashon-Maury Islands was collected on a regular basis. Although, there is no indicator for the marine environment, an indicator may be added next year with respect to sea level.

Status: Overall below standard with some areas of lesser concerns.

Influencing factors: Extensive development can substantially alter stream flow patterns and how they respond to rainfall. Changes in land use and/or vegetation, increases in groundwater withdrawals and climatic changes can adversely affect the quantity of groundwater.

What you can do: Practice conservation with respect to groundwater usage, low-water use gardening, adhere to regulations related to groundwater pumping, and support efforts to practice habitat restoration and best management practices to mitigate runoff resulting in flash flooding and channel erosion.

More information about King County's Water Quantity Index is available by continuing below for these measures:

- Normative Flows on Streams & Rivers
- Groundwater Water Levels on Vashon-Maury Islands

Normative Flows on Streams & Rivers

About this indicator: This indicator uses the Degree of Hydrologic Alteration (DHA) concept proposed by Brian Richter and others (1996, see Technical notes) to evaluate the relative departure of stream flows from estimated historic or normative conditions. For this particular indicator, the focus is on the degree of change in stream flashiness from historical conditions based on recent observations (1992-2011) of stream flow and modeled fully forested condition stream flow.

Because peak stream flow rises and falls more rapidly in urban areas and tends to have higher storm peak flows than forested areas, urban streams tend to have higher "flashiness" index scores. This "flashiness" is exacerbated by the generation of peak flows in urban streams during summer, which would not typically occur in forested streams. This increase in the "flashiness" index score represents the loss of water storage capability of soils and vegetation due to urbanization and the connection of paved surfaces and rooftops to streams via stormwater conveyance networks. To assess conditions throughout the county, "flashiness" was calculated each year for a set of 20 streams with long-term flow measurement records. The "flashiness" in each stream was compared to predictions from a hydrologic model that simulated stream flow under forested conditions. A mathematical comparison between the observations and the model predictions allow for an assessment of the Degree of Hydrologic Alteration at each stream flow measurement location.

Status: Flows from 20 stream sites in King County were measured and their "flashiness" calculated for the 2011 water year (October 2009-September 2011) and all other years for which data were available going back as far as 1992. Flows for seven of these streams were measured by the United States Geological Survey.

This indicator suggests that increased urbanization in King County has resulted in flashier stream flow response than previously occurred for most of the streams that have long-term stream flow monitoring data. In general, a high Degree of Hydrologic Alteration in stream flow flashiness has occurred in basins that are wholly or partially within the Urban Growth Area, which is consistent with the response of this indicator to urbanization. Stream basins that are wholly or predominantly outside of the Urban Growth Area tend to have a low Degree of Hydrologic Alteration in stream flow flashiness.

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Understand Industrial Waste Discharge Limits

Related Information

Puget Sound Marine Topics

Puget Sound Watershed

Vashon Island Environmental Information

King County marine research vessel "Liberty"

Hood Canal Marine Life Struggling for Oxygen

Lower Duwamish Watershed

Marine Benthic Invertebrate Communities Near King County Wastewater Outfalls

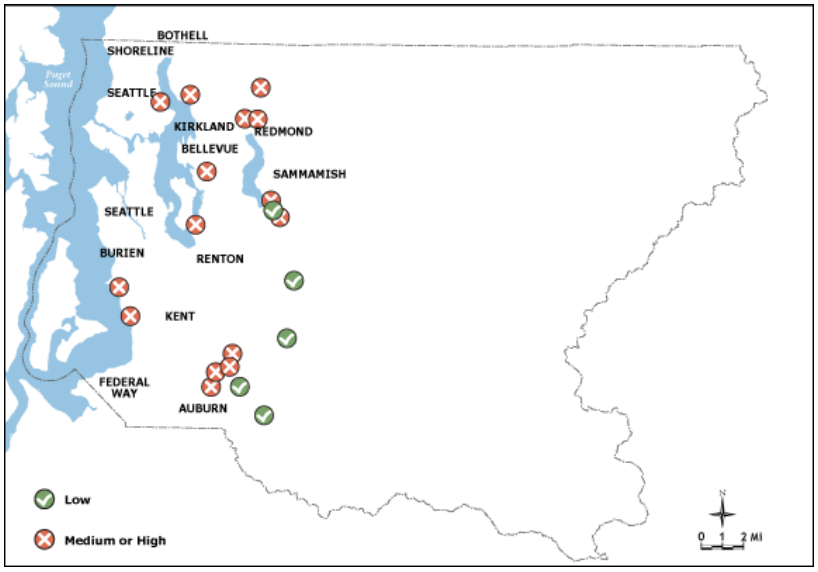
Water and Land Resources Division

Influencing factors: Extensive development can substantially alter stream flow patterns and how they respond to rainfall. In urban areas, surface runoff occurs more quickly than in forested areas because rainfall absorbing vegetation and soil are replaced by paved surfaces and rooftops connected to a conveyance system that routes rainfall runoff to streams. Faster runoff in urban areas results in higher peak stream flows, rising and falling more rapidly, than under forested conditions. Increased peak flows and "flashiness" lead to the most obvious effects from a human perspective — flash flooding and channel erosion. From a biological perspective, streams with greater "flashiness" are disturbed more often. Organisms that survive in these conditions are those that have adapted to more frequent and severe disturbances.

Existing DNRP response: King County has a range of regulatory, educational, and on-the-ground programs to reduce the impacts of development on streams and reduce the amount of "flashiness." The County's Drainage Design Manual directs drainage requirements for all new development.

The county's Stormwater Services group also implements stormwater retrofit projects designed to mitigate the effects of development on stream flow and water quality.

Priority new actions: In compliance with National Pollutant Elimination System permit requirements from the state (as part of the federal Clean Water Act), a closer linkage between the effectiveness of stormwater controls and flow, as well as water quality, is expected. This may translate into more monitoring at retention/detention ponds to make sure they are working as expected. More emphasis will also be placed on Low Impact Development (LID) techniques that minimize the amount of paved surfaces and rooftops that quickly direct water to streams and increase the opportunities for water to infiltrate into the ground. Examples of these LID techniques include green roofs, rain gardens, narrower streets and permeable pavement to name a few.



Degree of hydrological alteration in stream flow flashiness
1992 - 2011 Findings
Click to download the PDF version.

Technical notes for Normative Flows on Streams & Rivers

For definitions and more detail.

Groundwater Water Levels on Vashon-Maury Islands

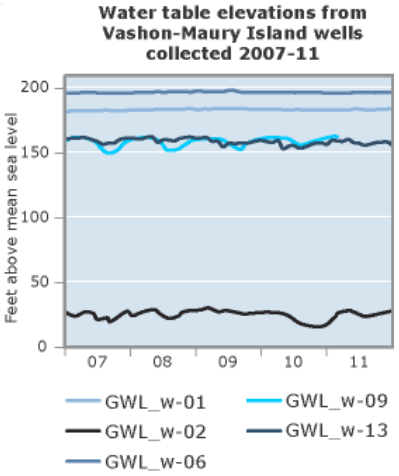
Marin Water Technical Reports

About this indicator: King County has been tracking groundwater quantity on Vashon-Maury Island since 2001. Water levels are tracked frequently in both volunteer and dedicated monitoring wells. King County's goal is to ensure sustainable water quantity through appropriate zoning regulations and high water quality through effective land-use and on-site septic regulations.

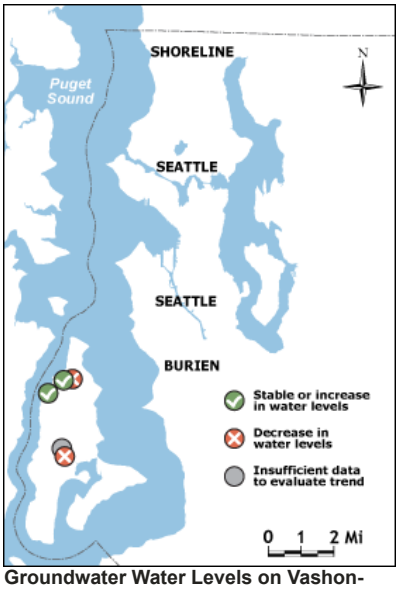
Status: Groundwater levels are generally increased in 2011. Two sites are still lowered than baseline but have improved from previous years.

Influencing factors: Changes in land use and/or vegetation, increases in groundwater withdrawals and climatic changes can adversely affect the quantity of groundwater. Changes in 2007 water levels are also thought to have been caused by reduced precipitation/recharge to island aquifers.

Existing DNRP response: King County plans to continue monitoring Vashon's wells and springs annually for water levels measurements.



Priority new actions: Additional locations have been sought to take water level measurements and increase our understanding of island aquifers. King County intends to produce Vashon-Maury Island-wide water table, contour maps with seasonal variability that will be reported every year.



Groundwater Water Levels on Vashon-Maury Islands
2011 Findings
Click to download the PDF version.

Technical notes for Groundwater Water Levels on Vashon-Maury Islands

For definitions and more detail.

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INDICATORS

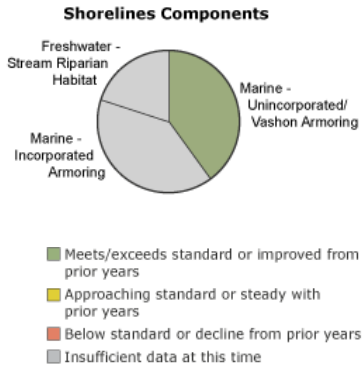
SHORELINES

2011 Rating:

About this indicator: King County's Shorelines Index is derived from two main groupings of results describing the conditions of shoreline along marine and freshwater environments. Wetland conditions do not factor into the index at this time because of inadequate data.

Status: A high percentage of shoreline has been armored with bulkheads and other structures. Countywide, stream riparian areas in rural areas have higher forest coverage than urban areas.

Influencing factors: Bulkheads impede natural erosion and cut off the supply of sand, rocks and other natural features that are home to native plant and animal species. Less forests along stream riparian corridors result in less stormwater control, less habitat for forest species, and aquatic systems that are less-healthy for fish.



What you can do:

- Consider alternatives to bulkheads and other artificial barriers to marine shorelines.
- Encourage your local city or town to make tree protection regulations stronger.

More information about King County's Shoreline Index is available by continuing below for these measures:

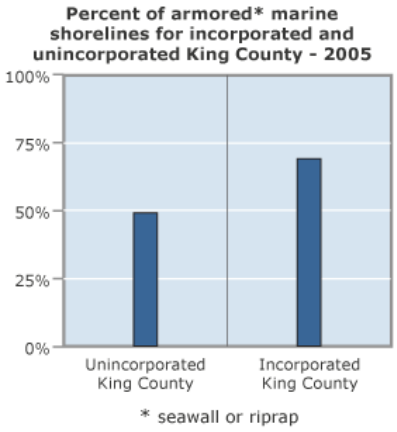
- Marine Shoreline Armoring
- Stream Riparian Habitat

Marine Shoreline armoring

About this indicator: King County's Shorelines Marine Environment Index includes information about the conditions of marine shorelines. Our weighting system applies 50 percent towards unincorporated/Vashon Island armoring and 50 percent toward incorporated area shoreline armoring.

Shoreline armoring can take the form of a bulkhead, sea wall, riprap, or any other built impediment to naturally advancing tidewaters. The amount of shoreline that has been armored can be used as a general indicator of the condition of marine shorelines.

When armoring is present, the health of habitats decline in the nearshore area (the water, shoreline and adjacent upland areas). The nearshore area is an important feeding, nesting and resting ground for many fish and wildlife species, including young salmon as they migrate from the stream of their birth to marine rearing areas.



Status: Conclusions from a baseline survey for shoreline armoring in 2005 show that many beach-feeding sediment sources have been locked up behind armoring. Much of King County's mainland shoreline has been armored — in stark contrast to the relatively natural shorelines along Vashon-Maury Islands.

The Central Puget Sound Basin is one of the most heavily urbanized areas within Puget Sound, and King County's armored marine shoreline is indicative of this.

Influencing factors: Property owners build bulkheads to protect their homes and businesses from erosion.

Existing DNRP response: King County is working to decrease the rate of new and currently existing shoreline armoring in unincorporated areas. Recognizing that not all armoring has the same impacts, these reductions will be focused where

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Vashon Island Environmental Information

Shoreline Ecology

Shoreline Parcel Characterization

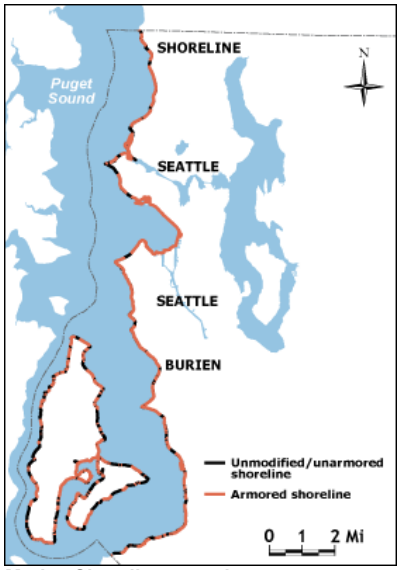
Interactive Shorelines Map

Shoreline Master Plan Updated

sediment delivery is restricted and most important. Removing or preventing armoring in deeper, inter-tidal waters is also a priority.

Many Vashon Island waterfront property owners who are applying for flexibility to critical areas regulations through the Rural Stewardship Planning process are being provided with alternatives to bulkhead construction.

Priority new actions: With a baseline in place, follow-up surveys of new armoring every five years will provide useful information. This will allow for a more realistic review of changes that occur naturally and the results of those initiated by King County. Additionally, King County's Shoreline Master Program update was adopted by the County Council in late 2010 and is awaiting adoption by The Washington Department of Ecology. The new SMP should reduce the rate of new shoreline armoring, especially within the Maury Island Marine Reserve.

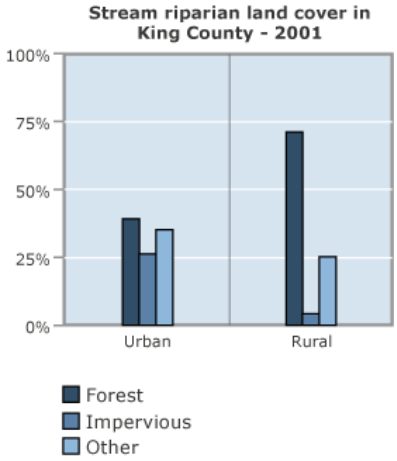


Marine Shoreline armoring
2005 Findings
Click to download the PDF version.

Technical notes for Marine Shoreline Armoring

For definitions and more detail.

Stream Riparian Habitat



About this indicator: King County's Shorelines Freshwater Environment Index includes information about the conditions of stream riparian habitats. There is no program for Lakes and River Floodplain Habitats.

Increased population and development have substantially altered the landscape in King County over the past two centuries. This indicator reflects landscape changes that protect forest and aquatic habitats along streamside, or riparian, corridors.

Forest data were derived from a 2001 Landsat image, and impervious area data were derived from 2000 multispectral images. The width of riparian areas along stream banks varied between a minimum 165-foot buffer on each side and expanded to include wetland and steep slope areas. Possible landslide areas that extend past this buffer were also included. This approach to defining "riparian areas" is intended to encompass functional features of adjacent lands that could have been missed if a simple buffer width were used.

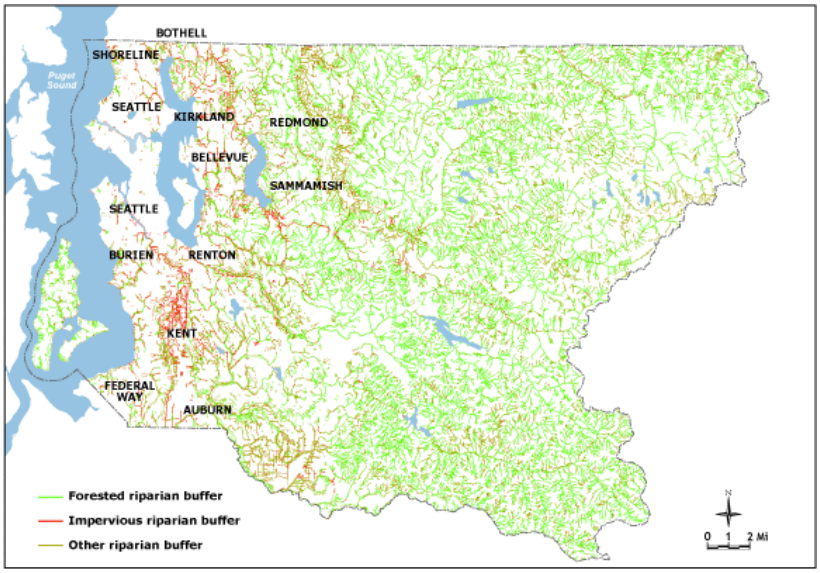
Status: Stream riparian land cover was categorized by urban vs. rural areas. Countywide, stream riparian areas in rural areas (71percent) have higher forest coverage than urban areas (39 percent), as shown in Chart 1 and Figure 1. Impervious coverage along the riparian corridor in urban areas (26 percent) was almost seven times more than in rural areas (4 percent).

Influencing factors: Forests naturally regulate stormwater runoff, protect water quality, provide habitat for many species, and maintain healthy streams and rivers for salmon and other fish. Less forests result in less stormwater control, less habitat for forest species, and aquatic systems that are less-healthy for fish. Increases in impervious surfaces are generally associated with the highest rates of stormwater runoff, the highest degradation in water quality, and the most impacts on forest and aquatic species.

Existing DNRP response: Land-use regulations, which were updated as part of the Critical Areas Ordinance in 2004, attempt to maintain a minimum of 65 percent forest cover and limit impervious areas to less than 10 percent in rural, unincorporated King County. They also provide extra protection for aquatic riparian areas. King County DNRP intends to monitor forest cover and impervious area within riparian zones.

The county works with landowners to restore streamside parcels that have important benefits as aquatic resources. In addition, the King County Water and Land Resources Division's capital projects program builds small and large stream and wetland enhancement projects while protecting public safety. Habitat restoration projects include streamside and wetland planting and in-stream habitat improvements.

Priority new actions: King County is in the midst of updating its 30-year old Shoreline Master Program, which guides land-use activities along shorelines of marine areas and most lakes and streams in unincorporated King County. The first step in this effort is to review current shoreline conditions, including ecology, public access, land use and historic resources. The program update, which is expected to be completed in mid 2010, will include changes that will have an effect on this indicator.



Stream Riparian Habitat
2001 Findings
Click to download the PDF version.

Technical notes for Stream Riparian Habitat

For definitions and more detail.

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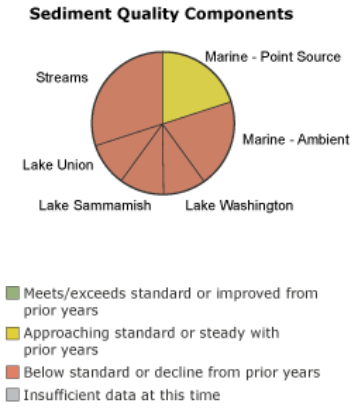
INDICATORS

SEDIMENT QUALITY

2011 Rating:

Sediments in Puget Sound

About this indicator: King County monitors sediments in lakes, streams, and at marine sites as part of it's ambient monitoring programs. Sediment quality is an important indicator of environmental health, and along with indicators of water quality, habitat, and the aquatic food web (i.e. plankton, invertebrates, and fish), it can present a clearer picture of environmental quality. Once contaminants are washed into surface waters and attach to bottom sediments they can persist where people can be exposed to them directly or indirectly by eating fish that have been caught in our local lakes, streams, and along shores where some of these contaminants can bioaccumulate up the food chain.



Status: Overall most of the lake stations found to have chemical concentrations high enough to probably be causing adverse effects in aquatic organisms were located in Lake Union and Lake Sammamish. Contaminants were found in streams in concentrations high enough to probably be causing adverse effects in aquatic organisms. Of the ambient sampling, more than half of the stations passed all of the chemical criteria.

What you can do:

- Properly dispose of pharmaceuticals, harmful chemicals and paints, instead of pouring them down the drain or allowing them to run off the ground.
- Minimize use of fertilizers and pesticides by practicing natural yard care.
- Wash your car on the grass or gravel instead of on the street or driveway, or take it to a car wash.
- Properly dispose of or manage met and livestock wastes.

More information about King County's Sediment Quality Index is available by continuing below for these measures:

- **Large Lakes Sediment Quality**
- **Stream Sediment Quality**
- **Marine Point Source Sediment Quality**
- **Marine Ambient Sediment Quality**

Large Lakes Sediment Quality

About this indicator: To understand what effect chemicals in sediments may be having on aquatic life, chemical concentrations are compared to sediment quality guidelines. The Washington State Department of Ecology has not promulgated numeric freshwater sediment chemical standards, but has evaluated existing numeric sediment quality guidelines and proposed a new set of numeric guidelines, known as the floating percentile method, for use in Washington State freshwater sediments.

In addition to using the floating percentile-derived guidelines, a more widely used set of guidelines that were developed by Smith et al (1996) in the Great Lakes region in 1996 were also used. These Smith guidelines represent a good balance between sensitivity and efficiency and also include guidelines for organochlorine pesticides (DDT, dieldrin, etc.), which are not included among the floating point guidelines.

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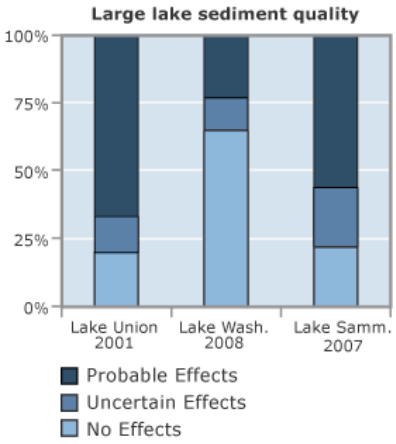


The Major Lakes Sediment Monitoring Program was begun in 1999 in Lakes Sammamish, Washington, and Union. An updated 10-year program was launched in 2007 to collect sediment quality information near storm drains, swimming beaches, and wildlife habitat areas. Additionally, a two-tiered sampling design allows for the assessment of long term trends in the deep main basins of the three major lakes.

This indicator is divided into three ratings: 1) adverse effects to aquatic organisms from chemical concentrations are unlikely; 2) adverse effects to aquatic organisms from chemical concentrations are uncertain; and 3) adverse effects to aquatic organisms from chemical concentration are probable. The three large lakes, Lake Washington, Union and Sammamish are weighted equally at 30 percent each for this indicator.

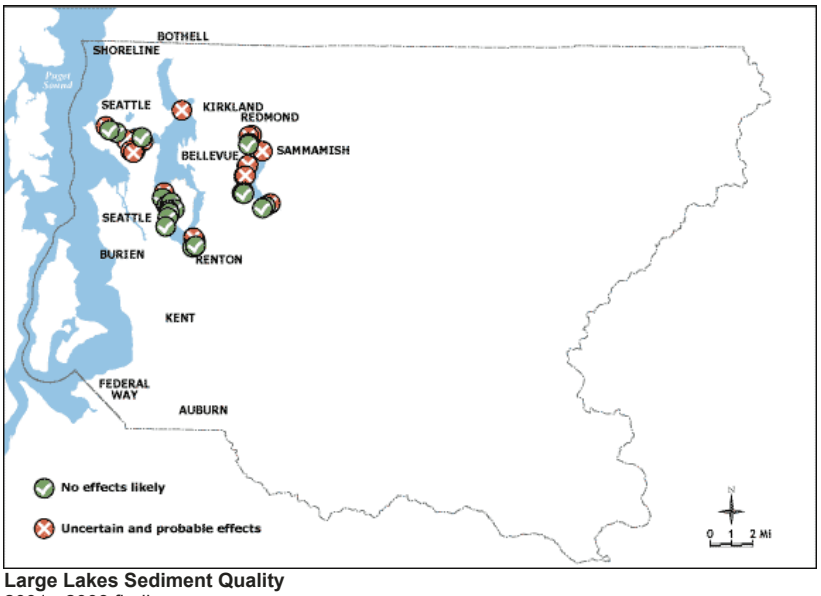
Status: In 2007 and 2008, 35 sediment samples were collected from Lakes Washington and Sammamish. A total of 18 samples were collected in Lake Sammamish, and 17 samples were collected in Lake Washington. Samples were analyzed for a variety of organic and metal contaminants. These data were compared to sediment quality guidelines. Results indicated that in Lake Sammamish concentrations in 10 of the samples were high enough to suggest that adverse effects to aquatic organisms are likely, in 4 samples effects are uncertain, and in 4 samples effects are unlikely. In Lake Washington concentrations in 4 of the samples were high enough to suggest adverse effects to aquatic organisms are likely, in 2 samples effects are uncertain, and in 11 samples effects are unlikely.

For 2011, the budget for this program was cut, resulting in the abandonment of the program part way through its 10-year design life. Additionally, no allocation was made to interpret and report data collected in 2010.

Influencing factors: Point sources, stormwater, and other discharges such as irrigation runoff, can wash contaminants into surface waters.

Existing DNRP response: This program's budget was cut and the program terminated.

Priority new actions: None

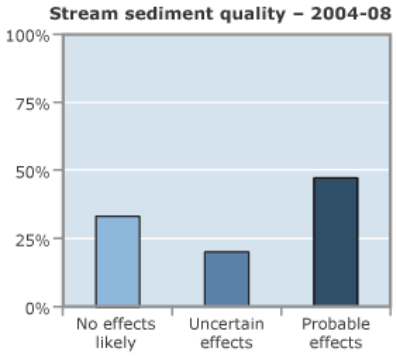


Large Lakes Sediment Quality
2001 - 2008 findings

Technical notes for Freshwater Environment — Large Lakes Sediment Quality

For definitions and more detail.

Streams Sediment Quality



About this indicator: To understand what effect chemicals in sediments may be having on aquatic life, chemical concentrations are compared to sediment quality guidelines. The Washington State Department of Ecology has not promulgated numeric freshwater sediment chemical standards, but has evaluated existing numeric sediment quality guidelines and proposed a new set of numeric guidelines, known as the floating percentile method, for use in Washington State freshwater sediments.

In addition to using the floating percentile-derived guidelines, a more widely used set of guidelines that were developed by Smith et al. in the Great Lakes region in 1996 were also used. These Smith guidelines represent a good balance between sensitivity and efficiency and also include guidelines for organochlorine pesticides (DDT, dieldrin, etc.), which are not included among the floating point guidelines.

The Stream Sediment Monitoring Program was begun in 1987 in WRIAs 8 and 9 as part of the overall Lakes and Streams Ambient Monitoring Program. An updated 10-year program began in 2004 to monitor the effects of all sources (point sources, stormwater, and other discharges) to the streams. Additional parameters were added to the existing sediment monitoring program to better understand the range of contaminants that affect sediment quality. A two-tiered sampling design allows for the assessment of sediment quality in individual stream basins as well as long-term trend analysis.

This indicator is divided into three ratings: 1) adverse effects to aquatic organisms from chemical concentrations are unlikely; 2) adverse effects to aquatic organisms from chemical concentrations are uncertain; and 3) adverse effects to aquatic organisms from chemical concentration are probable.

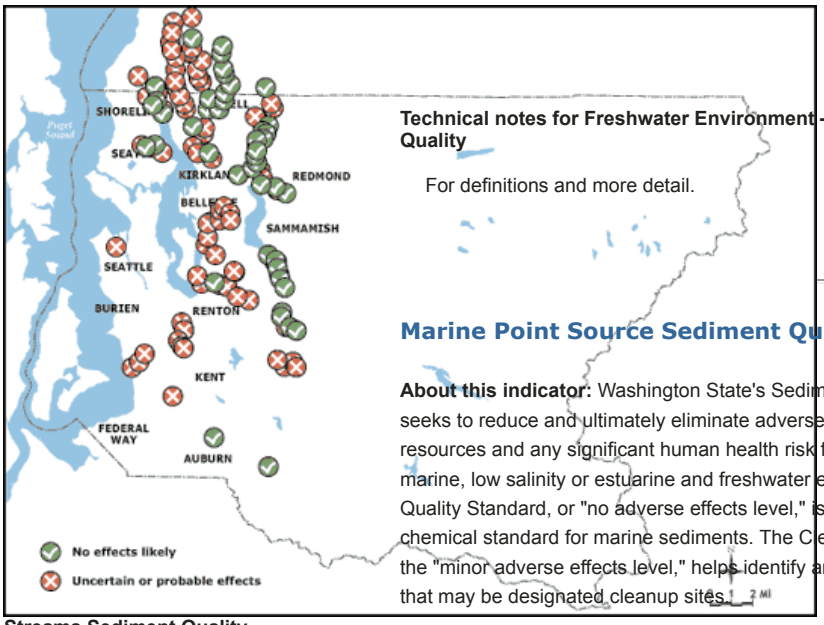
Status: Samples have been collected from 123 stations in King County streams between 2004 and 2008. Results from analysis completed in 2008 indicate that, while sediments at 48 of the stations were likely having no adverse effects on sediment biota. Concentrations, however, exceeded at least one sediment quality guideline at the remaining 75 stations. Of these 75 stations, 31 had concentrations low enough that the effects were uncertain and 44 had concentrations that were likely having adverse effects. Metals, phthalates (chemical plasticizer found in plastics) and legacy pesticides, such as DDT, continue to be a concern and are likely causing adverse effects to aquatic organisms in King County streams.

For 2011, the budget for this program was cut, resulting in the abandonment of the program part way through its 10-year design life. Additionally, no allocation was made to interpret and report data collected in 2010.

Influencing factors: Point sources, stormwater, and other discharges such as irrigation runoff, can wash contaminants into surface waters.

Existing DNRP response: This program's budget was cut and the program terminated.

Priority new actions: None



Streams Sediment Quality
2004 - 2008 findings

Technical notes for Freshwater Environment — Streams Sediment Quality

For definitions and more detail.

Marine Point Source Sediment Quality

About this indicator: Washington State's Sediment Management Standards seeks to reduce and ultimately eliminate adverse effects on biological resources and any significant human health risk from surface sediments in marine, low salinity or estuarine and freshwater environments. The Sediment Quality Standard, or "no adverse effects level," is the most protective chemical standard for marine sediments. The Cleanup Screening Level, or the "minor adverse effects level," helps identify areas of potential concern that may be designated cleanup sites.

The Sediment Quality Standard has been selected as the indicator because it is the more sensitive of the two criteria for environmental protection. Data from 2001 are used because they represent the most recent comprehensive survey of sediment quality in King County. In 2001, sediment sites were divided into two categories. Ambient sites were chosen to reflect general, or ambient, environmental conditions. Point source stations are located near King County wastewater treatment plant outfalls and combined sewer overflow outfalls. Data from 2001 is still relevant for analysis because sediments (particularly those that are polluted) move slowly and do not change much over five years unless clean up efforts have been taken.

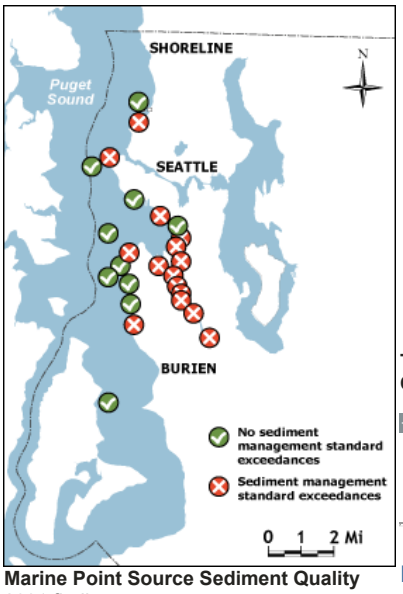
Details related to a 2007 sampling event for ambient stations are presented with the indicator for Marine Environment — Ambient Sediment Quality.

Status: Of the 15 point source-related sites that exceed the Sediment Quality Standard, eight do not require clean up or monitoring. Six of the remaining seven point source sites are associated with combined sewer overflow outfalls, and one is associated with an emergency overflow.

Influencing factors: Many pollutants found in the environment are not detected in water, but are attached to sediment particles. Once in the sediments, these pollutants can directly harm marine organisms or be reintroduced to the food chain through the organisms found in marine sediments.

Existing DNRP response: Strategies to achieve the outcome goal focus on collaborating with other organizations, including the City of Seattle, Port of Seattle, and Boeing, with which King County has joined to form a public-private partnership called the Lower Duwamish Waterway Group. This group will be funding cleanups at "early action sites" as part of the Lower Duwamish Waterway federal Superfund process. A partial cleanup was completed in 2004 at the first of these sites, the Duwamish/Diagonal Way site. A follow-up cleanup was completed in 2005.

Priority new actions: The cleanup of the Lower Duwamish Waterway includes a multi-agency, source-control effort to reduce the potential for future recontamination. Additional sediment site cleanups may be completed later under Superfund, or as part of other activities in the Duwamish waterways. It is expected that three to five additional sites could be addressed by 2010.



Marine Point Source Sediment Quality
2001 findings

Technical Notes for Marine Environment — Point Source Sediment Quality

For definitions and more detail.

Marine Ambient Subtidal Sediment Quality

About this indicator: Washington State's Sediment Management Standards (SMS) seek to reduce and ultimately eliminate adverse effects on biological resources and any significant human health risk from surface sediments in marine, low salinity or estuarine, and freshwater environments. King County developed a new ambient marine sediment sampling program in 2007. Data from subtidal marine sediment samples collected from stations in Puget Sound within King County are compared to the SMS chemical criteria (Chapter 173-204 WAC).

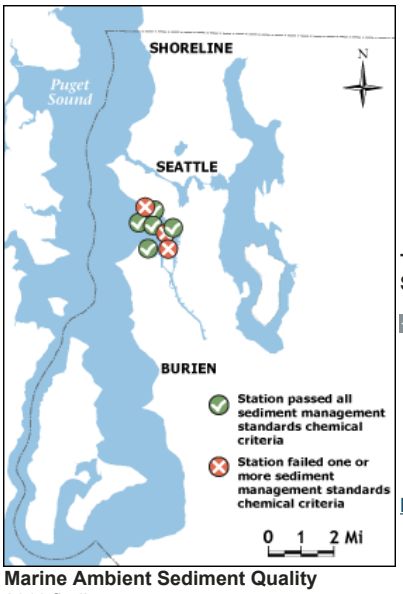
As part of the new plan, King County will be collecting subtidal marine sediment samples from eight locations in Elliott Bay, every two years, and from three locations in the Puget Sound main basin and three associated embayments (Salmon Bay, Fauntleroy Cove, and Quartermaster Harbor), every five years. In 2007, sediment chemistry data from 14 locations were used for this indicator. Sediment samples were collected from the eight Elliott Bay Stations in 2009 and again in 2011. The other six ambient stations will not be sampled again until the summer of 2012.

Status: Based on the 2011 data for Elliott Bay (the most recent data), five of the eight Elliott Bay stations (63%) passed all SMS chemical criteria. Three of the eight stations (37%) failed one or more SMS chemical criteria. The Harbor Island station failed the mercury criterion, one of the central Elliott Bay stations failed the PCB criterion, and the Piers 90/91 station failed the mercury and PCB criteria.

Influencing factors: Many pollutants found in the environment are not detected in water, but are attached to sediment particles. Once in the sediments, these pollutants can directly harm marine organisms or be reintroduced to the food chain through the organisms found in marine sediments.

Existing DNRP response: King County will continue to monitor ambient sediment quality in its marine waters every two years in Elliott Bay and every five years in the central basin of Puget Sound and associated embayments. The six ambient stations will be sampled in 2012 and the eight Elliott Bay stations will be sampled next in 2013.

Priority new actions: There are no "priority new actions" at this time.



Marine Ambient Sediment Quality
2011 findings

Technical Notes for Marine Environment — Ambient Subtidal Sediment Quality

For definitions and more detail.

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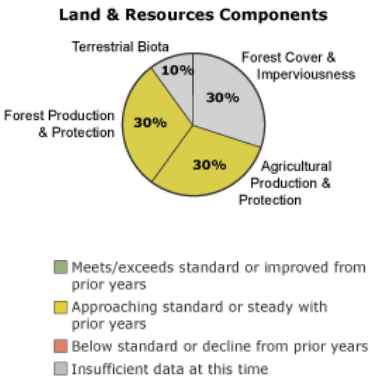
INDICATORS

LAND AND RESOURCES

2011 Rating: ⇔

About this Indicator

This indicator summarizes the status of conditions that address the conservation of land and other natural resources in King County. The land and resources included in this indicator are generally ones that King County's Department of Natural Resources and Parks seeks to improve through its program and service delivery. While DNRP can track certain aspects of agriculture and forestry protection and productivity, we have the ability to only periodically track levels of forest cover and imperviousness and have no regular or comprehensive way to track and understand changes in terrestrial/land-based biota (plants and animals).



Status

Agriculture and forestry productivity and protection levels in King County are generally stable and near their targeted levels. Currently there are 41,164 acres of zoned farmland in the county, some of which is not farmable due to wetlands, steep slopes and other conditions. The development rights on 13,371 agricultural acres have been purchased through the Farmland Preservation Program.

Forest protection levels remain at or near targets, with about 30% of the rural acres covered by stewardship plans or enrolled in incentive programs.

Influencing factors

A wide range of State and Federal policies, economic conditions, and the decisions of individual property owners affect the land and resources conservation practices here. Markets for agricultural and timber products, priorities of landowners, conservation incentives of the Farm Bill, and consumer preferences all bear on landowner decisions that affect conservation.

Budget allocations, regulatory and policy changes all play a role in King CountyÕs land conservation and acquisition activities. For example, the ability of the Farmland Preservation Program to purchase development rights depends on the available funding and farmland values vary widely depending on the location of the farm in the county.

DNRP response

DNRP has been advancing a range of innovative programs to encourage and support the conservation of land and resources in King County. These include:

- Puget Sound Fresh;
- Transfer of Development Rights program;
- Current Use Taxation incentive programs;
- Local Action on Biodiversity;
- The Farmland Preservation Program; and
- Various Forest Conservation programs

What you can do:

Landowners interested in improving conservation practices have a range of useful; resources to draw upon. Important actions may include:

WHAT CAN YOU DO?

At Home

Create your own Native Plant Landscape

Volunteer for a Habitat Restoration Project

Buy local farm products

At Work

Develop a Forest Stewardship Plan

Reduce Holiday Food Waste

Related Information

DNRP Budget And Organization Chart

Forestry Topics

Agriculture Topics

King County Ecological Lands

Noxious Weed Control

Biodiversity in King County

GIS Center iMap

- **Develop a conservation and/or biodiversity protection plan**
- **Investigate resource protection incentive programs**
- **Transfer development rights**

As a consumer in King County, you can help maintain the viability of local agriculture by purchasing from local farmers, visit **Puget Sound Fresh**.

More information about King County's Land and Resources indicators is available by continuing to these indicators:

- **Forest Cover & Imperviousness**
- **Agricultural Production & Protection**
- **Forest Production & Protection**
- **Terrestrial Biota**

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INDICATORS

FOREST COVER AND IMPERVIOUSNESS

2011 Rating:

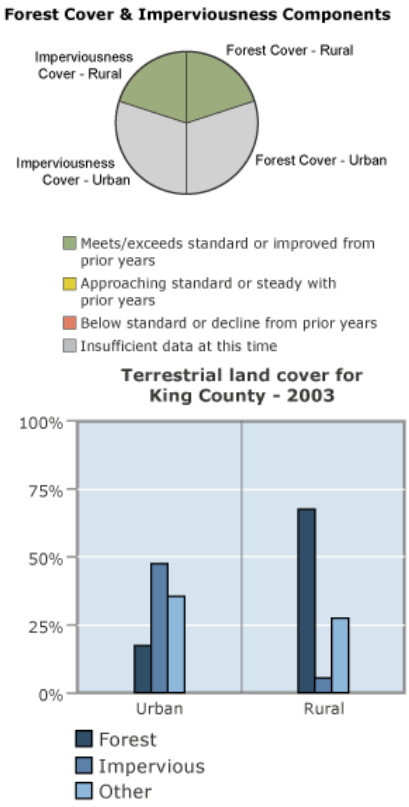
About this indicator: Increased population and development have substantially altered the landscape in King County over the past two centuries. Of particular interest for the protection of salmon and other aquatic resources is the conversion of forest and natural land cover to hard or impervious surfaces, such as roofs, sidewalks parking lots and roads.

This indicator reflects landscape changes that protect forest and aquatic habitats. The percent of the landscape maintained as forest, and the percent that has been converted to impervious area, is presented watershed-wide for all of King County. Forest data were derived from a 2001 Landsat image, and impervious area data were derived from 2000 multispectral images.

Status: Total land cover was categorized by urban vs. rural areas. Countywide, rural areas (67 percent) have higher forest coverage than urban areas (17 percent). Impervious coverage in urban areas (47 percent) was almost 10 times more than in rural areas (5 percent).

Influencing factors: Forests naturally regulate stormwater runoff, provide habitat for many species and maintain healthy streams and rivers for salmon and other fish. Less forests result in less stormwater control, less habitat for forest species and aquatic systems that are less healthy for fish and other species. Increases in impervious surfaces are generally associated with the highest rates of stormwater runoff, the highest degradation in water quality and the most impacts on forest and aquatic species.

Existing DNRP response: Land-use regulations, recently updated as part of the Critical Areas Ordinance in 2004, attempt to maintain a minimum of 65 percent forest cover and limit impervious areas to less than 10 percent in rural, unincorporated King County. King County DNRP intends to monitor forest cover and impervious areas.



Priority new actions: King County is in the midst of updating its 30-year old Shoreline Master Program, which guides land-use activities along shorelines of marine areas and most lakes and streams in unincorporated King County. The first step in this effort is to review current shoreline conditions, including ecology, public access, land use and historic resources. The program update, which is expected to be completed in late 2008, will include changes that will have some effect on this indicator.

WHAT CAN YOU DO?

At Home

Volunteer for a Habitat Restoration Project

At Work

Develop a Forest Stewardship Plan

Smart Growth

Related Information

Forestry Topics

King County Ecological Lands

Greenprint for King County

GIS Center iMap

Native Plants

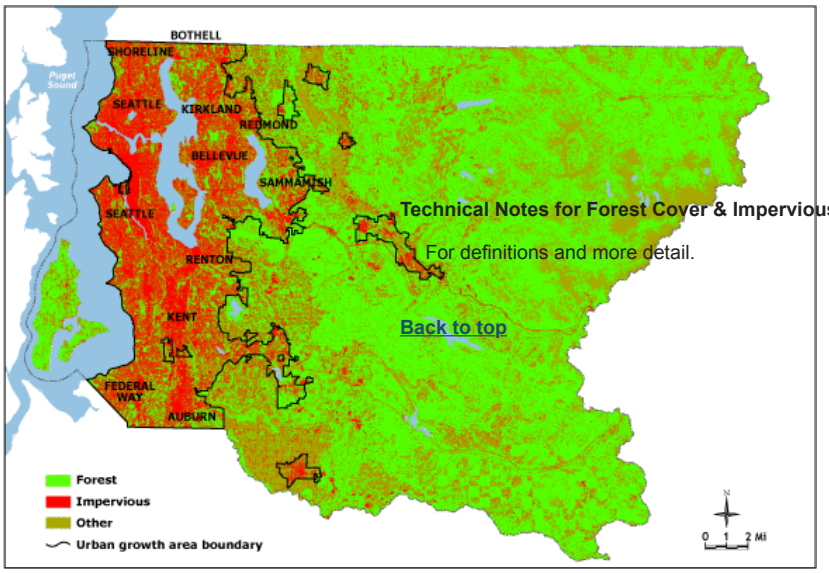
Snoqualmie Valley farmers' conservation efforts

Plant Biodiversity

PCBs Threaten Duwamish River Cleanup

Arsenic and lead contamination in King County soil

Wa Ecology soil study of King County



Technical Notes for Forest Cover & Imperviousness

For definitions and more detail.

Back to top

Forest covered and impervious areas
2003 Findings
Click to download the PDF version.

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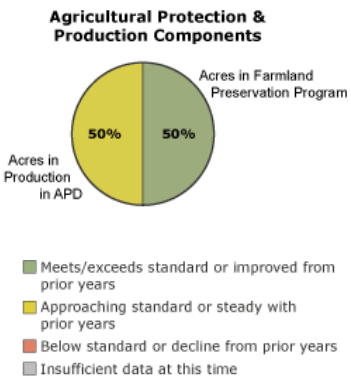
INDICATORS

AGRICULTURAL PRODUCTION & PROTECTION

2011 Rating: ⇔



About this indicator: Agriculture is an important land use in the county. The production of food is a critical contribution to supporting the local economy and healthy diets of King County citizens. Farms provide important benefits such as providing habitat for wildlife and fish, improve water quality, and offer opportunities to learn about our local environment.

One major challenge to maintaining agriculture in the county is the ability of farmers to find affordable land. The Farmland Preservation Program helps preserve agriculture by purchasing the development rights from farmland. This helps reduce the cost of farmland by discouraging other non-farm uses.

Existing DNRP response: In cooperation with the King County Agriculture Commission, DNRP continues to identify and prioritize farms that could be enrolled in the Farmland Preservation Program. As funding becomes available, we work with the landowner to purchase their development rights.

We monitor and suggest updates to the County's Comprehensive Plan and Code for policies and regulations that adversely affect (or don't reflect the changing nature of) agriculture. We work to develop incentives that encourage farming in the county.

King County's work in protecting farmland and promoting agriculture was rated as one of the best county programs in a recent study of farmland protection programs in the Puget Sound Region by the American Farmland Trust. **See a report on this study**.

What you can do:

- Purchase local farm products. **See a list of local farms**
- Support local farm preservation efforts
- If you own land that is not being farmed, consider enrolling it the **FarmLink Program**.

More information about King County's Agricultural Production & Protection Index is available by continuing below for these measures:

- **Acres in Farmland Preservation Program**
- **Acres in Production in APD**

WHAT CAN YOU DO?

At Home

Support local farms

Plant a garden

At Work

Smart Growth

Related Information

Forestry Topics

GIS Center iMap

King County Agriculture Program

Farms and markets in King County

King County Future of Farming, Realize Meaningful Solutions (FARMS) Report

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Acres in Farmland Preservation Program

About this indicator: The Farmland Preservation Program helps preserve agriculture by purchasing the development rights from farmland. This helps reduce the cost of farmland by discouraging other non-farm uses.

Status: The development rights on 13,371 acres have been purchased through the Farmland Preservation Program.

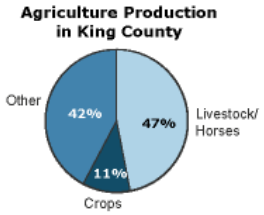
Influencing factors: The ability of the Farmland Preservation Program to purchase development rights depends on the available funding. Farmland values vary widely depending on the location of the farm in the county.

Priority new actions: Continue to explore new and enhanced funding options for the Farmland Preservation Program.

Acres in Production in Agricultural Production District (APD)

About this indicator: The number of acres in agricultural production is an

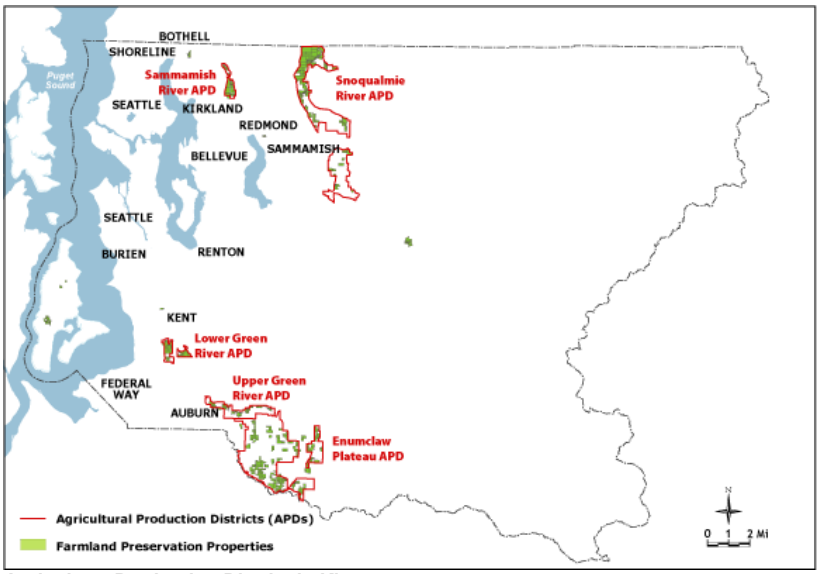
important indicator of the health of agriculture in the county. Local food production is critical to the food security and the economy of the county.



Status: Currently there are 41,164 acres of zoned farmland in the county. Some of that land is not farmable due to wetlands, steep slopes and other conditions. Therefore, about 24,000 acres are actually farmed. In addition there are 25,000 acres of land farmed in other areas of the county, mainly on RA zoned land. When taking into account the variable methods in measuring farmed properties from one reporting period to another, the amount of farmed acres has remained relatively stable.

Influencing factors: Whether APD lands are farmed or not depends largely on the interests, objectives and capabilities of the landowners. Some non-farming landowners just want a large residential property; some have stopped farming because they have reached retirement age. The county does not require APD land to be farmed, but works to ensure that farming is possible and profitable.

Priority new actions: Continue to provide technical and marketing assistance to farmers. Ensure King County regulations do not discourage farming. Continue working to keep land available for farming and affordable for new farmers.



Agriculture Production District in King County
2003 Findings
Click to download the PDF version.

Technical Notes for Agricultural Production & Protection

For definitions and more detail.

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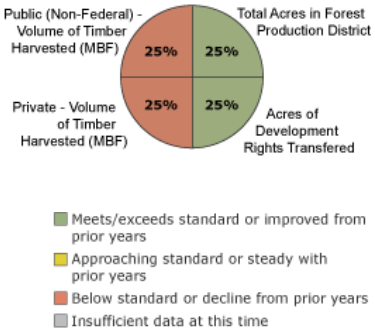
INDICATORS

FOREST PRODUCTION AND PROTECTION

2011 Rating: ⇔

About this indicator: This forestry indicator combines a look at forest land conservation with forest production trend information. The indicators include both private and public lands.

Forest Protection & Production Components



The Forest Production District (FPD), which is the county's designated forestland of long term commercial significance, is 824,000 acres, over half of King County. Another 52,630 acres have been identified as Rural Forest Focus Areas; these are large contiguous blocks of forested land in the rural area.

The number of acres of forestland in the FPD and the number of acres of forested land conserved through easements limiting the development rights are used as indicators of long term conservation of working forest.

Washington Department of Revenue data is used to track the volume of timber harvested in King County each year. It is an indicator of the economic activity of forestry reflecting the general health of the forest industry. It is broken down into public and private lands.

DNRP Response: The DNRP Forestry Program works on County policy to encourage forestry and to ensure that the County is meeting its obligations under the state's Growth Management Act to protect forestland of long term commercial significance. Policies encourage both the protection of the land base and support for continued forestry as a commercial activity. The Department staffs the Rural Forest Commission, which advises on County policies, regulations and programs relevant to forestry. The Department also has a Transfer of Development Rights (TDR) program that works with forest landowners to transfer development rights from their properties to ensure permanent protection of forest resources through conservation easements placed over the property when development rights are transferred.

What you can do

- Develop a forest stewardship plan for your forested property
- Learn how to protect your home from wildfire and have a healthy forest too
- Consider enrolling protecting your forested land through a property tax reduction or transfer of development rights program

More information about King County's Forest Production & Protection Index is available by continuing below for these measures:

- Acres of Development Rights Transferred
- Total Acres in Forest Production District
- Private — volume of timber harvested (MBF)
- Public (non-federal) — volume of timber harvested (MBF)

Acres of Development Rights Transferred

About this indicator: This indicator looks at acres preserved in forest in the Forest Production District and Rural Forest Focus Areas. Securing easements on private forestland to restrict development is a relatively new conservation tool in King County.

Status: More than 140,000 acres of working forest in King County have been protected through King County's Transfer of Development Rights program. Public transactions have protected nearly 94,500 acres and private transactions have protected more than 45,500 acres. The two largest deals were a King county purchase of development rights from 89,500 acres of the Snoqualmie Tree Farm and a private transaction protecting more than 45,000 acres in the upper Green River

WHAT CAN YOU DO?

At Home

Create your own Native Plant Landscape

Volunteer for a Habitat Restoration Project

At Work

Develop a Forest Stewardship Plan

Related Information

Forestry Topics

King County Ecological Lands

GIS Center iMap

Plant Biodiversity

Washington Department of Natural Resources - external link

watershed.

Influencing factors: Adding to the acreage under easements is a result of complicated negotiations, funding availability, and willingness of landowners to enter into easement agreements.

Priority new actions: DNRP is not only working to protect large forested tracts, but is also working with the owners of smaller forest acreages that experience strong pressure to convert forest to urban land uses.

Technical notes for Acres of Development Rights Transferred

For definitions and more detail.

Total Acres in Forest Production District

About this indicator: Total acreage in the FPD zoning designation is stable while land use patterns within the FPD are subject to change. Population growth puts pressures on the forest industry, as the land becomes more valuable for residential uses and encroaching development makes it more difficult to conduct forestry operations.

Status: Currently there are 824,000 acres in the Forest Production District. Of this, about 233,000 acres are owned by large commercial interests. This is a decrease of about 53,000 acres since 1997.

Influencing factors: An analysis of private land ownership changes reveals that forestland in the FPD is gradually being subdivided and sold by large timber companies to smaller individual and commercial ownerships. The smaller parcels are more likely to be developed for residential purposes and not managed for commercial forestry. Government purchases of commercial forestland in the FPD in recent years also have tended to take land out of forest production.

Priority new actions: Two adopted 2008 Comprehensive Plan policies address the public land in the FPD. One recognizes the large area of the FPD that is publicly owned, encourages continued forest management on these lands, and directs the County to collaborate with other land managers. The second directs the County to encourage continued private forestry in its acquisition efforts, and directs that acquisitions in the FPD be evaluated to ensure that the long term commercial significance of the FPD is not compromised.

Technical notes for Total Acres in Forest Production District

For definitions and more detail.

Private — volume of timber harvested (MBF)

About this indicator: Timber sale volume in the county is used as an indicator of the general health of the forest industry. Timber harvests vary widely from year to year, so it is useful to examine many years of data in order to see trends.

Status: In 2010 timber harvested on private land totaled 62.8 million board feet valued at $14 million. Timber harvests have generally declined since 2005 with a particularly sharp drop in 2009 to about half of the ten-year average annual volume.

Influencing factors: The data show that forest harvest is variable from year to year. The most significant influencing factor for how much timber is harvested in any one year is the price of logs, which varies considerably depending on housing markets and other factors. In contrast, the harvest levels on public land are more likely a result of long term plans rather than a response to markets.

Technical notes for Private — volume of timber harvested (MBF)

For definitions and more detail.

Public (non-federal) — volume of timber harvested (MBF)

About this indicator: The variation in harvest levels on public land does not follow the trend on private lands. They both vary widely, but do not track each other from year to year.

Status: Timber harvests on public lands in King County totaled 19 million board feet valued at $4.3 million in 2010. These represent a sharp drop in both volume and revenue from 2007, but are higher than 2008 and 2009.

Influencing factors: A large part of the FPD, sixty-eight percent, is in public ownership, which preserves the forest land base, but does not necessarily contribute to forestry activity. The USDA Forest Service ownership, the Cedar River and Tolt River watersheds owned by the City of Seattle, the State Natural Resource Conservation Areas, and the King County natural areas, are restrictive in their land management policy, allowing no or very limited forestry activities.

Priority new actions: Comprehensive Plan policies encourage continued forest management on public lands in the FPD and direct that the County's acquisitions of private forestland in the FPD be evaluated to ensure that the long term commercial significance of the FPD is not compromised.

Technical notes for Public (non-federal) — volume of timber harvested (MBF)

For definitions and more detail.

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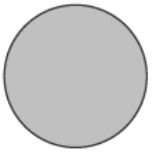
INDICATORS

TERRESTRIAL BIOTA

2011 Rating:

Indicator: King County's Terrestrial Biota Index is weighted at 10 percent of the entire Land & Resources Index. Mammals, birds, amphibians, and overall biodiversity should be included in the assessment of wildlife health, but there is no consistently collected data regarding these animals or biodiversity in King County. A long-term wildlife monitoring program is proposed as a new biodiversity initiative through King County's Local Action for Biodiversity efforts. However, a program has not been established nor funding secured.

Terrestrial Biota Components



Terrestrial Biota

- Meets/exceeds standard or improved from prior years
- Approaching standard or steady with prior years
- Below standard or decline from prior years
- Insufficient data at this time

Influencing factors: Over the past two centuries, increased human population and development have substantially altered King County's landscape. A decrease in the amount of vegetated land cover has generally reduced the amount of habitat for native animal and plant species. Pollutant runoff, loss of forest cover, loss of wetlands, climate change, fragmented habitat, and invasive species are the more significant factors that have an effect on terrestrial biota.

Existing DNRP response: Although there is no existing population monitoring for terrestrial biota in King County, WLR continues to implement programs that focus on minimizing degradation from development and pollutant runoff from farms, preventing the loss of forest cover, and implementing watershed improvement projects. WLR's capital projects program builds wetland enhancement projects. Basin stewards work with the local community to respond to resident's inquiries for watershed protection, coordinate efforts among diverse public agencies, facilitate watershed project implementation, provide assistance to monitoring programs and provide public education opportunities.

Priority new actions: King County is developing a biodiversity strategy and action plan.

What you can do: Contact your elected officials and express how important wildlife protections and a biodiversity strategy are to you.

More information about King County's Terrestrial Biota is available by continuing to these pages:

- Biodiversity in King County
- Beavers
- Species of Interest in King County
- King County Biodiversity Report 2008
- Aquatic Plants
- Mussels

Technical Notes for Terrestrial Biota

For definitions and more detail.

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WHAT CAN YOU DO?

At Home

Home & garden hints for healthy streams & salmon

Salmon Safe Practices

Salmon Smart: A Guide to Help People Help Salmon

At Work

Volunteer for a Habitat Restoration Project

Related Information

Salmon and Trout Topics

Shoreline Parcel Characterization

Green-Duwamish Habitat Projects

Clean river for fish and wildlife

Salmon ladder award

Toxic Stormwater Threatens Sea Life

your input can be considered for subsequent updates.

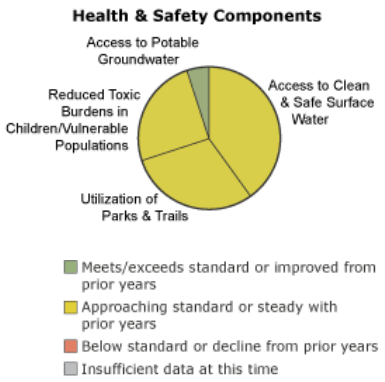
INDICATORS

HEALTH AND SAFETY

2011 Rating: ⇔

About this Indicator

This new indicator summarizes the status of several conditions that contribute to the health and safety of King County residents. These conditions are ones that King County's Department of Natural Resources and Parks seeks to improve through its program and service delivery.



Status

Most sub-indicators are approaching standards and/or are stable.

Influencing factors

Many broad societal and economic factors, as well as individual decisions, bear on conditions that affect the health and safety of King County residents.

Utilizations rates of parks and trails are affected by weather, the team sport programs of school districts, and the popularity of private facilities and programs that serve local residents.

The toxic burdens to children and vulnerable populations in our communities are influenced by national and state laws, product design decisions of consumer product manufacturers, and exposure levels that vary by household.

Access to clean and safe surface waters of streams, rivers, lakes and marine waters are influenced by decisions of households and local businesses, federal and state policies, and legacies of prior industrial activities.

DNRP response

The Local Hazardous Waste Management Program (LHWMP) has a range of innovative programs underway to combat exposure to and build-up of toxic substances in humans and the environment. LHWMP is focusing its efforts to increase

- the protection of King County's most vulnerable residents by:
- Working 'upstream' to reduce the production of hazardous wastes and materials;
- Facilitating 'product stewardship' policies and programs; and
- Enhancing hazardous waste management capacities and responsibilities

To improve access to clean and safe surface waters, DNRP is:

- improving facilities which convey and treat wastewater
- partnering with other jurisdictions to promote stewardship of land and water
- reaching out to land owners and land managers with technical assistance and education

To increase utilization of parks and trails, DNRP is:

- Expanding and improving the Regional Trail System
- Partnering with community organizations to expand and improve facilities for passive and active recreation
- Improve maintenance levels at existing park facilities

What you can do

WHAT CAN YOU DO?

At Home

Shoreline Practices for a Healthy Lake, River or Stream

Embrace Natural Yard Care

Home & garden hints for healthy streams & salmon

At Work

Reduce your runoff, get a fee discount

Learn Best Practices to reduce Stormwater Pollution

Erosion Control for Construction Sites

Apply Integrated Pest Management in your landscaping

Related Information

DNRP Budget And Organization Chart

King County Watersheds

Salmon and Trout Topics

Shoreline Master Program

Streams Water Quality Monitoring Data

Groundwater data

Normative Flow Studies

Interactive Hydrography Map

- Minimize your impact to surface waters by driving less, cleaning up pet waste, and improving yard care practices.
- Reduce toxic burdens through environmentally-preferable purchasing decisions, eating lower on the food chain, nd reducing your exposure to house dust and other environmental contaminants.
- Protect groundwater through water conservation and improving yard care and land management practices.

More information about King County's Health & Safety indicators is available by continuing to these indicators:

- **Access to Clean & Safe Surface Water**
- **Utilization of Parks & Trails**
- **Reduced Toxic Burdens in Children / Vulnerable Populations**
- **Access to Potable Groundwater**

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- Mistakes to fix

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EPA: Lower Duwamish Watershed

INDICATORS

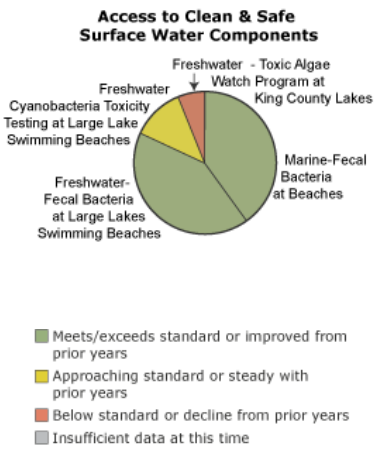
ACCESS TO CLEAN AND SAFE SURFACE WATER

2011 Rating:

About this indicator: King County's Access to Clean and Safe Surface Water Index includes information about the conditions of water quality at freshwater and marine environments.

Status: Overall, conditions were at standard.

Influencing factors: Fecal coliform bacteria can enter lakes, streams and Puget Sound from untreated wastewater effluent, household or farm animals, wildlife, storm water runoff, sewage overflows or failing septic systems. Increased temperatures due to regional climate changes, coupled with increased watershed development and nutrients, may lead to increased cyanobacteria blooms and possible toxin production. Cyanobacteria populations are known to increase with increased nutrients in the lake.



What you can do:

- Properly dispose of or manage pet and livestock wastes.
- Minimize the use of fertilizers and pesticides by practicing natural yard care.
- Wash your car on the grass or gravel instead of on the street or driveway, or take it to a car wash.
- Report algal blooms on lakes.

More information about King County's Access to Clean and Safe Surface Water is available by continuing below for these measures:

- Fecal Bacteria at Large Lakes Swimming Beaches
- Routine Cyanobacteria Toxicity Testing at Large Lakes
- Toxic Algae Watch Program at all Lakes
- Fecal Bacteria at Marine Beaches

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Related Information

Washington State Toxic Algae site

King County Watersheds

Salmon and Trout Topics

Shoreline Master Program

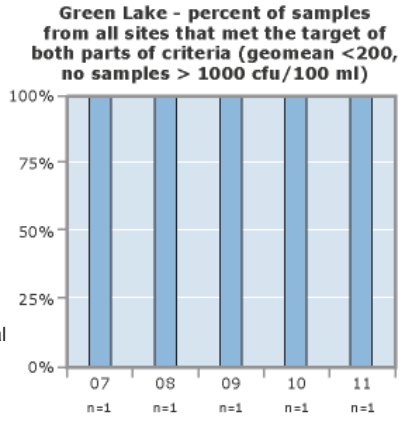
Streams Water Quality Monitoring Data

Groundwater data

Normative Flow Studies

Fecal Bacteria at Large Lakes Swimming Beaches

About this indicator: When fecal coliform bacteria are found in lake waters it indicates a higher probability that the water has been contaminated with fecal material from humans, birds or other animals. Although fecal coliform bacteria themselves are usually not harmful, they often occur with other disease-causing bacteria so their presence indicates the potential for pathogens to be present that are a risk to human health.



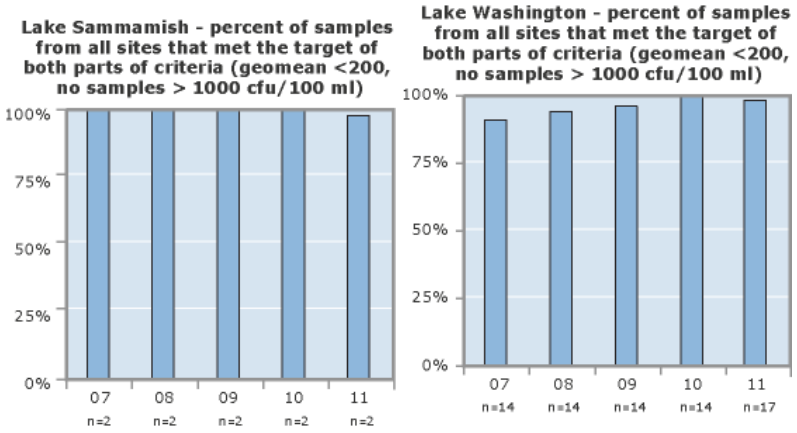
Status: In 2011 there were several beaches monitored in Lake Washington (Gene Coulon, Houghton, Madison Park, Matthews Beach, Meydenbauer) and Lake Sammamish (Idylwood) that had incidents of high bacteria and did not meet target goals of meeting both parts of "The Ten State Standard" - a geometric mean of 200 CFU/100ml (colony forming units per 100 milliliter) fecal coliform with no single sample exceeding 1000 CFU/100ml. These events appear to have been short lived and did not result in closures. Juanita Beach was monitored only the last six weeks of the season as the park had been closed for renovation. Bacteria levels were low in Green Lake for the ninth year in a row.

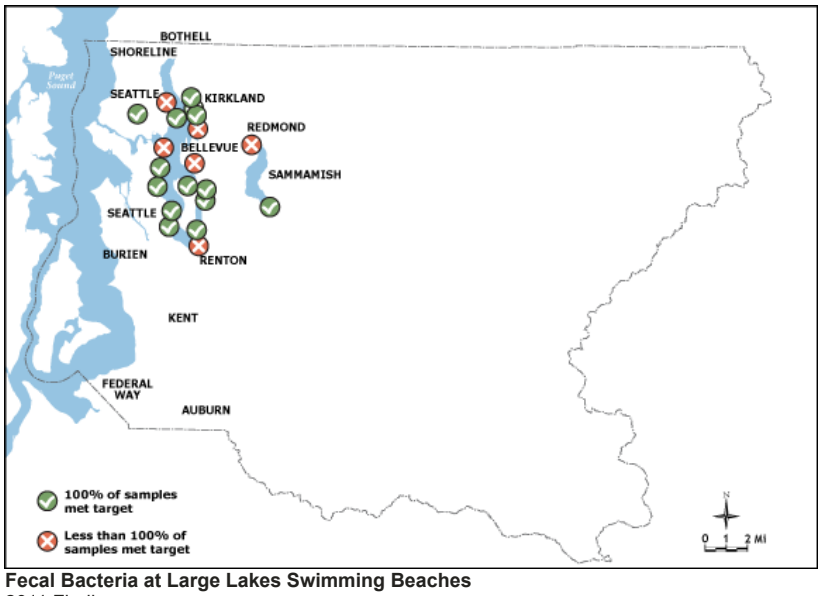
Influencing factors: Fecal coliform bacteria can enter lakes from untreated wastewater effluent, household or farm animals,

wildlife, storm water runoff, sewage overflows or failing septic systems. Monitoring results have shown that streams draining from urbanized areas have high fecal coliform concentrations. Beaches that are adjacent to these streams are at higher risk for fecal bacteria contamination.

Existing DNRP response: King County routinely monitors swimming beaches from mid-May through mid-September to determine levels of bacterial pollution and works with Public Health Seattle & King County to estimate relative human health risks. If bacterial counts at swimming beach testing sites have a geomean greater than 200 colonies per 100 ml of water or have a single sample greater than 1000 colonies per 100 ml, the beach will be immediately resampled and temporarily closed if needed.

Priority new actions: Identification and correction of sewer leaks, changes to park maintenance procedures and control of non-migratory, non-native waterfowl should reduce bacteria contributed from waterfowl and improve the water quality at large lake swimming beaches. Efforts to identify and correct bacterial source in the urban streams that discharge adjacent to swimming beaches will continue. An intensive bacteria monitoring survey effort took place in the Juanita Creek basin in 2008 as a joint effort between King County DNRP, the City of Kirkland, and the Washington State Department of Ecology. The intensive study identified key subbasin areas in need of further action which began in 2011. Similar intensive investigations took place in the Idlywood Creek, Issaquah Creek, and Boise Creek basins in 2011. Follow up on action items identified in these basins will continue in 2012 using new microbial source tracking analysis methods available through the King County Environmental Lab.





Fecal Bacteria at Large Lakes Swimming Beaches
2011 Findings
Click to download the PDF version.

Technical notes for Fecal Bacteria at Large Lakes Swimming Beaches

For definitions and more detail.

Interactive Hydrography Map

Shoreline Master Plan Updated

Lower Duwamish Watershed

Cyanobacteria Toxicity Testing at Large Lakes Swimming Beaches

About this indicator: King County wants to maintain the safety of lakes for all beneficial uses. Certain species of freshwater cyanobacteria (bluegreen "algae") are known to make toxins occasionally that are potentially harmful to mammals. Smaller-bodied animals drinking directly from affected water bodies are particularly at risk, and there are records of pet deaths in Washington State related directly to contact and ingestion of algae blooms.

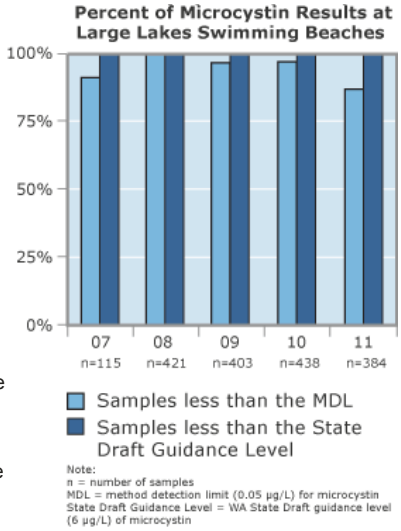
Washington State standards for potential harmful levels of cyanotoxins are currently under development. In 2008 the State set provisional recreational guidance levels of 6 µg/L for microcystin and 1 µg/L for anatoxin as warning thresholds for possible health risks from contact with lake water. Similar guidelines for several other known toxins are currently under study.

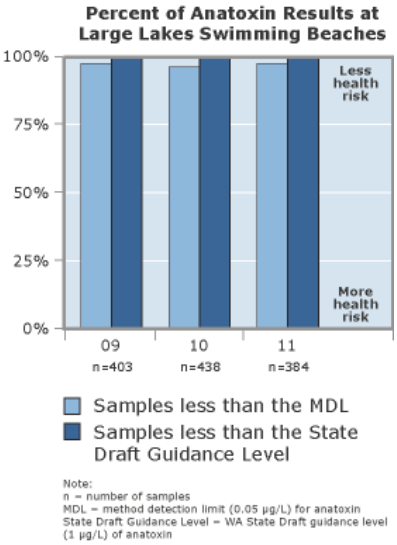
In 2003 the Major Lakes Monitoring Program began routine monitoring for the presence of microcystin at designated stations in Lakes Washington, Sammamish, and Union, also testing blooms when observed. Testing for anatoxin began in 2009. In 2009, routine sampling for cyanotoxins at offshore lake stations was discontinued due to budget cuts. However, monitoring will continue at beaches sampled as part of the Swimming Beach Monitoring Program to assess risk to recreational users.

Our indicator applies equal weighting to all data collected at the 18 beaches sampled in 2011. This environmental indicator is represented as a percent of the total samples collected at each lake having microcystin or anatoxin results below the minimum detection level and/or lower than the State draft guidance level.

Status: Over the last seven years including 2011, only two samples, both of which were collected from algal scums on Lake Washington, one in 2006 and one in 2010, exceeded the State guidance level for microcystin of 6 µg/L. For anatoxin, 2011 was the third year of measurement, and all samples were below the State guidance level of 1 µg/L.

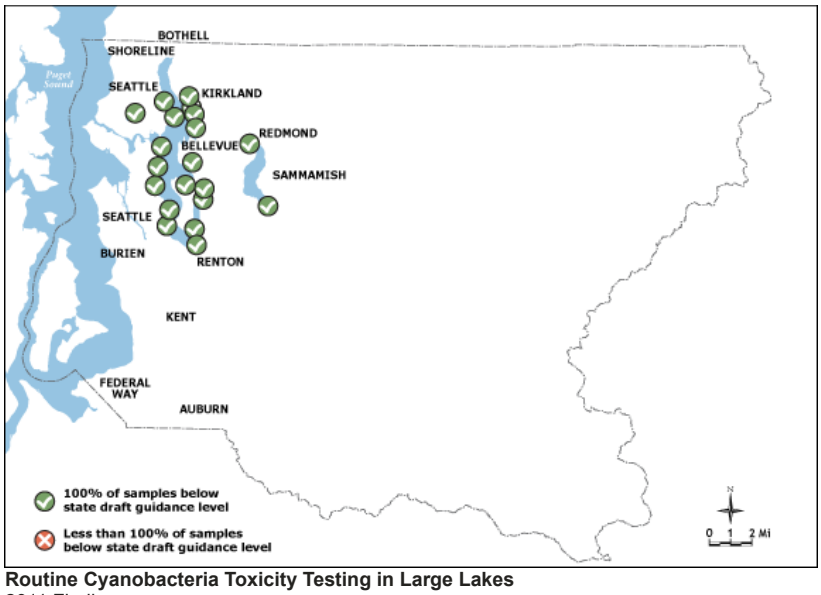
Influencing factors: Cyanobacteria blooms are more frequent in the summer and fall, although they may occur throughout the year. Increased temperatures due to regional climate changes, coupled with increased watershed development and nutrients, may lead to increased cyanobacteria blooms and possible toxin production. Cyanobacteria populations are known to respond positively to increased nutrients in lakes. Managing nutrient inputs to lakes can reduce the abundance of cyanobacteria and reduce the incidence of cyanobacteria toxicity.





Existing DNRP response: In 2012 swimming beaches will be monitored for cyanobacteria toxicity through the Major Lake Monitoring and Swimming Beach Monitoring programs. Any bloom determined to be above the proposed state threshold will trigger assessment of the health risk posed and possible action to post warnings or close the water body temporarily for use.

Priority new actions: Continued education of the public through the King County web pages will expand public awareness of cyanobacteria blooms and the resources available to investigate potentially toxicity. In 2011 King County Environmental Laboratory expanded its capacity to offer screening of two further toxins, saxitoxin and cylindrospermopsin. Water bodies with repeated dangerous levels of cyanobacteria toxins will be considered for management activity to reduce rate of incidence if available funds can be identified.



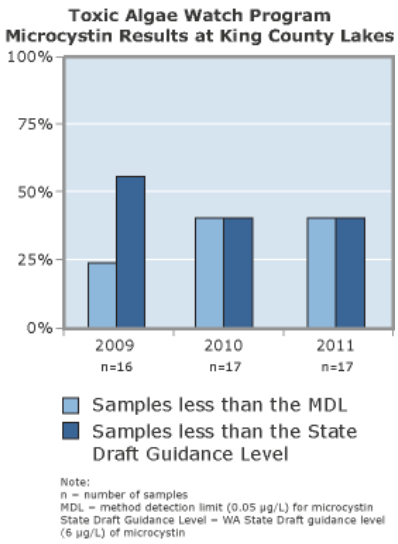
Routine Cyanobacteria Toxicity Testing in Large Lakes
2011 Findings
Click to download the PDF version.

Technical notes for Cyanobacteria Toxicity Testing at Lakes

For definitions and more detail.

Toxic Algae Watch at King County Lakes

About this indicator: King County wants to maintain the safety of lakes for all beneficial uses. Certain species of freshwater cyanobacteria (bluegreen "algae") are known to make toxins occasionally that are potentially harmful to mammals. Smaller-bodied animals drinking directly from affected water bodies are particularly at risk, and there are records of pet deaths in Washington State related directly to contact and ingestion of algae blooms.

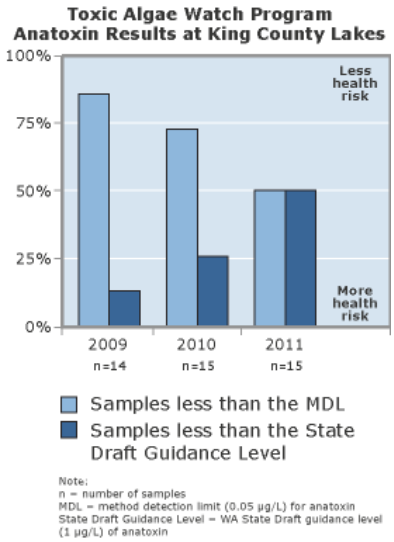


Washington State standards for potential harmful levels of several cyanotoxins are currently under development. Provisional State recreational guidance levels of 6 µg/L for microcystin, and 1 µg/L for anatoxin have been set recently as warning thresholds for possible health risks from recreational exposure to lake water. Thresholds for several other known toxins are currently under study.

In 2007 the Washington Department of Ecology began a program to assist citizens and local jurisdictions with identification of cyanobacteria blooms and toxin testing at the King County Environmental Lab. Microcystin was targeted in 2007, and anatoxin was added in 2009. The King County Lake Stewardship Program participates in the program and has trained staff and lake volunteers to report and sample blooms. In addition, King County is collaborating in a regional study to determine the incidence and strength of toxicity in smaller lakes, which includes routine biweekly monitoring through 2011on 10 selected lakes in King County with known histories of bluegreen blooms.

This environmental indicator includes all King County lakes with samples submitted for testing in 2011 outside the routine Swimming Beach Monitoring Program and is represented as a percent of tested lakes with toxin results less than the State guidance level. Samples other than the routine project samples were collected only if a potential toxic algal bloom was reported to State or County staff. In 2011 Lakes Burien, Green, Jeane, Lorene and

Wilderness were sampled for microcystin, on multiple occasions because of persistent toxicity. The maximum value attained for each lake was the criterion for assigning status for the indicator.

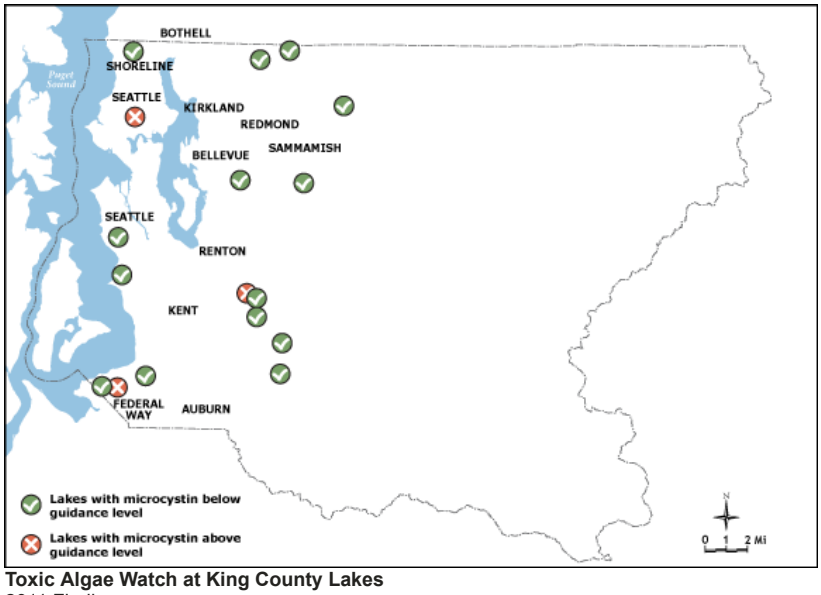


Status: In 2009, the reduction of the Lake Stewardship volunteer monitoring program from 50 to 12 lakes reduced the number of volunteers looking for algal blooms and reporting their presence. Participation in the regional collaborative program added 10 lakes monitored routinely from June through October. In addition to routine monitoring, in 2011 seven other county lakes had at least one sample submitted under the State algae program.

Influencing factors: Cyanobacteria blooms are more frequent in late summer through late fall, although they may occur at any time. Increased temperatures from regional climate changes, coupled with increased watershed development leading to higher nutrient loading to surface waters, may encourage cyanobacteria blooms with toxin production. Managing nutrient inputs into lakes can reduce the abundance of cyanobacteria and thus reduce the incidence of cyanobacterial toxicity.

Existing DNRP response: King County has established a cooperative relationship with the Department of Ecology Algae Program and will continue to sample all blooms reported through the Lake Stewardship and Trouble Call programs. Any bloom determined to be above the proposed state threshold will trigger assessment of the health risk posed and, if warranted, action ranging from posting warnings to closing the water body temporarily for use. In 2010 King County Environmental Laboratory expanded its capacity to offer screening of two additional toxins, if warranted, saxitoxin and cylindrospermopsin.

Priority new actions: Continued education of the public through the King County web pages will expand public awareness of cyanobacteria blooms and the resources available to investigate potentially toxicity. Water bodies with repeated dangerous levels of cyanobacteria toxins will be considered for management activity to reduce rate of incidence if available funds can be identified.



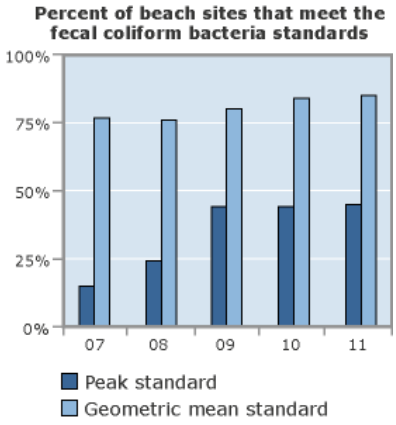
Toxic Algae Watch at King County Lakes
2011 Findings
Click to download the PDF version.

Technical notes for Toxic Algae Watch Program at Lakes

For definitions and more detail.

Fecal Bacteria at Marine Beaches

About this indicator: Fecal coliforms are one of many groups of bacteria that indicate the presence of fecal contamination at swimming beaches. The State of Washington's water quality regulatory standards indicate that organism counts should not exceed a geometric mean value of 14 colony-forming units (CFU) per 100 ml, and not more than 10 percent of the samples used to calculate the geometric mean should exceed 43 CFU per 100 ml. These standards are known as the geo-mean standard and the peak standard, respectively, and are intended to be protective of human health in relation to primary contact recreation (e.g. swimming) and shellfish consumption.



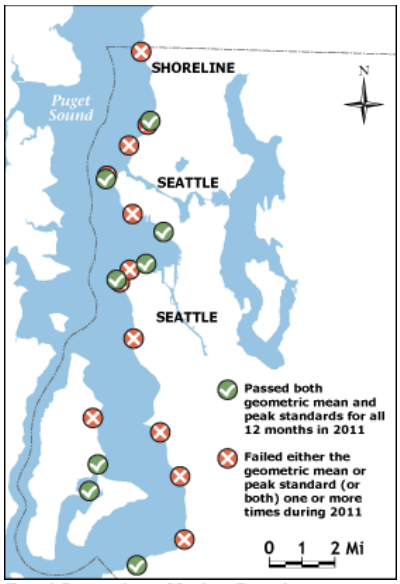
Comparisons to both the geo-mean and peak standard are made for each beach site monitored and reported for this indicator, using fecal coliform counts from samples collected on a monthly basis from 20 stations in 2011. Due to budget constraints, the number of marine beach stations monitored in 2011 dropped 20% - from 25 to 20 stations. The geo-mean value reflects the typical fecal coliform count at a given site, while the peak value is used to determine whether pulses of high fecal coliform counts may be present at a site.

Status: During 2011, 8 of the 20 stations monitored (40 percent) met both the geo-mean and peak standards for all 12 sampling events. Seventeen of the 20 stations (85 percent) met the geo-mean standard for all 12 sampling events, but did not meet the peak standard one or more times. Three of the 20 stations (15 percent) did not meet either the geo-mean or peak standards one or more times. The three stations that failed both the geo-mean and peak standards were located near Carkeek Park, Alki Point, and Redondo Beach. Stations with any type of standard failure are shown on the map by the red circled X.

Influencing factors: Fecal coliform concentrations measured at marine beach sites are highly influenced by proximity to fresh water inputs, especially during rainfall events. For example, two of the three stations that failed both the geomean standard and peak standard one or more times are located near freshwater inputs. The Carkeek Park station is located near the mouth of Piper's Creek and the Alki Point station is located near a stormwater outfall.

Existing DNRP response: Past and on-going efforts by King County have reduced fecal contamination from most wastewater outfalls to the point that contributions from non-point sources in the area are more significant than the outfalls themselves. DNRP has little control on improving current levels of fecal coliforms near most outfall sites.

Priority new actions: DNRP will pursue efforts to determine sources of non-point source contributions of fecal coliforms, if data warrant. These efforts will include evaluating emerging technologies in microbial source tracking, and the continued application of fecal coliform survey projects, such as the one performed at Alki Point in 2006. Potential candidates for microbial source tracking in 2011 include Redondo Beach and Golden Gardens Park. DNRP will continue to work with the State of Washington BEACH program on these trouble spots. Due to budget constraints, however, DNRP has had to reduce the beach monitoring program for 2011 from 25 to 20 stations. Those stations that were discontinued include Edwards Point, Me-Kwa-Mooks Park, Seahurst Park, Point Robinson Park, and Lisabuela Park.



Fecal Bacteria at Marine Beaches
2011 Findings
Click to download the PDF version.

Technical notes for Fecal Bacteria at Marine Beaches

For definitions and more detail.

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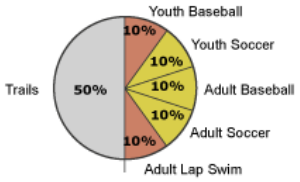
INDICATORS

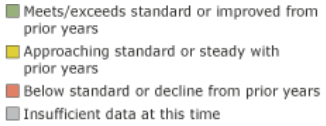
USE OF PARKS AND TRAILS

2011 Rating: ⇔

About this indicator: This is a new indicator to look at utilization trends of recreation facilities and programs. Originally conceived to analyze scheduling trends of park facilities, data provided contradictions in what is understood in recreation trends. In order to report on trends a more robust analysis is required and is queued up for 2008 that will include data from public and private facility managers, and sports leagues. This data will be analyzed with multiple demographic layers to better understand what drives upward and downward trends in utilization of recreation facilities and programs.

Utilization of Parks & Trails Components





Status: Initial findings reveal that baseball and swimming reservations at some park facilities in the county have declined from 2005 to 2007, while soccer as increased. However, the data collected is inadequate to make broader trend statements.

Influencing factors: Some influencing factors that resulted in a decrease in utilization include fee increases and poor facility conditions. Analyzing a fuller recreational inventory with broader list of recreational providers should allow us to address influencing factors and speak to trends with more confidence.

Existing DNRP response: Some efforts to improve the trend in utilization include converting athletic fields to lit synthetic turf, continuing to offer sports grant programs that improve facilities and directing capital resources to geographic areas where there are deficits in recreation facilities.

Priority new actions: In addition to continuing the efforts noted above, other actions to be taken to better understand and improve utilization rates will include working with cities and recreation providers such as the YMCA, and Boys and Girls Club to assess membership and identify hindrances to increased membership. This will result in a richer understanding of where resources should be spent to meet recreational needs. Both the Youth Sports Facility Grant and Community Partnerships and Grants Programs are likely solutions to meeting this need.

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Related Information

Regional trail equity information

Lake Topics

King County Watersheds

Salmon and Trout Topics

Shoreline Master Program

Major Lake Data

Interactive Hydrography Map

Small Lake Monitoring Data

Shoreline Master Plan Updated

Lake Washington's Ecosystem

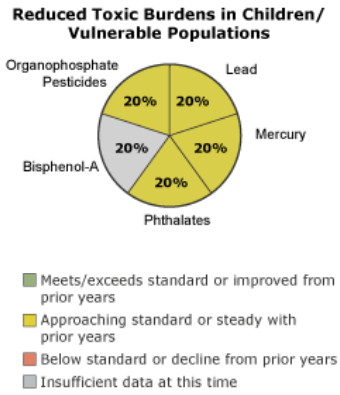
INDICATORS

REDUCED TOXIC BURDENS IN CHILDREN / VULNERABLE POPULATIONS

2011 Rating:

About this indicator: As a place-holder until such time as local data are available, this indicator is derived from 5 high-risk chemicals measured in the U.S. population by the Centers for Disease Control. "NHANES" data are extracted for the following key chemicals, for which we have reduction efforts underway or being initiated in the King County area:

- Lead
- Mercury
- Phthalate plasticizers
- Bisphenol-A
- Organophosphate pesticides



Equal weighting is given at this time. Subsequent enhancements could be derived from the Washington State Department of Health's "Washington Environmental Public Health Tracking Network," which will report local data on lead in children and adults, organophosphate and carbamate pesticides in exposed workers, and other chemicals in the future.

Status: Little data specific to King County forces us, at this time, to look to national and state data as place holders.

Influencing factors: Exposures to hazardous chemicals come from a wide variety of sources, starting in the womb from mothers' own body burdens, to foods, food containers, dust, old paint, carpets and many other products and materials. It is a very complex area, yet one we should be concerned about when we see elevated chemical levels in tests of blood, urine, bone or other tissues. Even in the face of scientific uncertainty, it behooves us to reduce such body burdens of known problem chemicals to the extent possible.

Existing DNRP response: Complementary with King County's extensive work on reduction of hazardous chemicals in the environment, we are concerned about exposures of our population to chemicals that are known to cause health and well-being problems, such as lead, mercury and other priority toxins. In particular, Public Health efforts have focused on elevated blood lead in children. Local Hazardous Waste Management Program priorities include lead, mercury, bisphenol-A, and certain pesticides including the organophosphates. In addition to finding ways for individuals to reduce their and their children's exposures, efforts include policy changes at the local and state level to eliminate these chemicals in new products and to safely remove older materials.

Priority new actions: A number of state and federal initiatives have addressed these priority toxins in the past two years. The 2010 legislature passed a new law that will require the manufacturers of mercury-containing lamps such as fluorescent bulbs to set up a take-back system which will help to reduce mercury exposures from this source. Work continues to address the chronic exposure to lead in old paint and the dust in older homes, including new federal regulations that require work done in any remodeling or other disturbance that might release more lead from old paint into the home environment be done by certified contractors. Lead and phthalates in toys and other products widely used by children are addressed in a law passed by the state legislature in 2008 and by the federal government the same year. The 2010 Washington legislature also passed a law banning bisphenol-A, an estrogenic chemical found to leach out of polycarbonate plastics and other resins, in baby products and in sport water bottles. Efforts to reduce and/or eliminate remaining uses of organophosphate pesticides continue.

What you can do:

- Choose products that do not contain these hazardous chemicals, where possible.
- If living in a home built or painted before the late 1970s, reduce exposure to dusts.
- Seek certified contractors to assist with removal of lead paint when doing any reconstruction or when dealing with peeling surfaces.

WHAT CAN YOU DO?

At Home

Properly dispose of Household Hazardous Waste

Check for and repair failed septic systems

Install Rain Barrels at home

At Work

Properly dispose of Hazardous Waste

Water irrigation

Don't Flush the Planet

Saving Water

Related Information

Take-it-Back stores equity information

King County Watersheds

King County Groundwater Management

Interactive Groundwater Map

A Survey of Ditches on County Roads For Their Potential to Affect Storm Runoff Water Quality

On-Site Runoff Mitigation with Rooftop Rainwater Collection and Use

Agricultural Waterways in King County

- Follow Integrated Pest Management and Natural Yard Care practices to minimize pesticide use.
- Safely dispose of old household hazardous wastes through local collection services.
- Contact your elected officials and express how important reduction of exposure to high-hazard chemicals is, especially to young children.

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Environmental Limitations to Vegetation Establishment and Growth in Vegetated Stormwater Biofilters

INDICATORS

ACCESS TO POTABLE GROUNDWATER

2011 Rating:

Nitrates in Groundwater on Vashon-Maury Islands

About this indicator: King County has been tracking groundwater quality on Vashon-Maury Island since 2001. Nitrate is used to track groundwater quality because it is a good indicator of changes caused by human activities, such as land-use development. King County's goal is to ensure high water quality through effective land-use and on-site septic regulations.

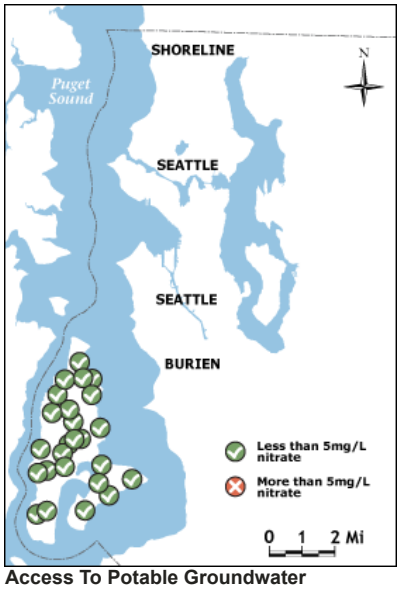
The groundwater quality indicator uses a nitrate index, defined as the maximum concentration of the annual sampling results divided by the maximum contaminant level (MCL) of Nitrate (10 mg/L). This method yields one number. The closer this index gets to 1 (or over 1) the greater concern. The nitrate index for 2011 is below 0.5 with a value of 0.36. The nitrate index has been improving since 2009.

Status: Of the 25 well/spring sites monitored, all have tested below the drinking water standard (Maximum Contaminant Level, MCL of 10 mg/L) and all are less than 5 mg per liter of nitrate present. Less than half the sites tested have seen above average nitrate increases since testing began.

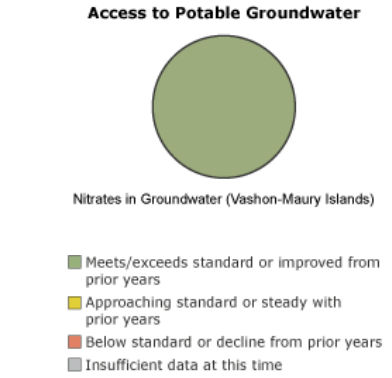
Influencing factors: Poor drainage systems, improperly maintained septic systems and improper fertilizer use can increase nitrate levels.

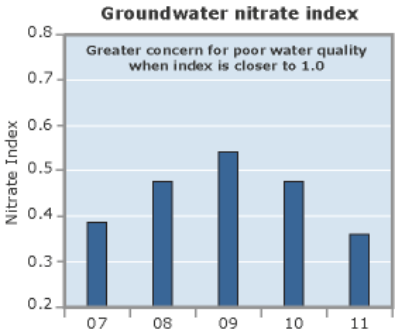
Existing DNRP response: King County plans to continue monitoring Vashon's wells and springs annually for nitrate concentrations.

Priority new actions: Additional locations have been sought to increase our understanding of island aquifers. King County intends to produce Vashon-Maury Island-wide water table, contour maps with seasonal variability that will be reported every year.



Access To Potable Groundwater
2011 Findings
Click to download the PDF version.





Technical notes for Nitrates in Groundwater on Vashon-Maury Islands

WHAT CAN YOU DO?

At Home

Properly dispose of Household Hazardous Waste

Check for and repair failed septic systems

Install Rain Barrels at home

At Work

Properly dispose of Hazardous Waste

Water irrigation

Don't Flush the Planet

Saving Water

Related Information

King County Watersheds

King County Groundwater Management

Interactive Groundwater Map

A Survey of Ditches on County Roads For Their Potential to Affect Storm Runoff Water Quality

On-Site Runoff Mitigation with Rooftop Rainwater Collection and Use

Agricultural Waterways in King County

Environmental Limitations to Vegetation

For definitions and more detail.

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- Mistakes to fix

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Establishment and Growth in Vegetated Stormwater Biofilters

INDICATORS

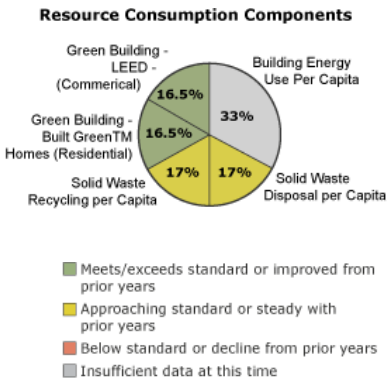
RESOURCE CONSUMPTION

2011 Rating:

About this Indicator

Every society uses the earth's natural resources. Fossil fuels, water, and other raw materials are just a few of the resources we rely on every day. We must understand and monitor our use of these resources in order to manage them fairly and with future generations in mind.

Our ability to reuse or recycle the wastes we generate reduces demand for new resources. Decreasing waste generation—through conservation or recycling—also reduces the waste we send to landfills. In 2009, single-family households in King County recycled 54 percent of their solid waste, and solid waste disposal for single-family households remained at 26 pounds per week.



Status

Targets as established in the King County Solid Waste Comprehensive Plan for both solid waste recycling and disposal were not met in 2009. The decrease in the recycling rate reflects improved measurement of non-recyclable materials placed in recycling containers which now count as disposal, not recycling. Disposal rates stayed the same as 2008 despite the continued economic downturn, perhaps due to an increase in residential waste generation, as residents spent less time at work or recreating outside the home and more time pursuing in-home activities.

Adoption of green building practices in the commercial sector continued in 2009, as shown by the number of completed projects that have been certified as LEED™ buildings by the U.S. Green Building Council (USGBC). LEED™ stands for Leadership in Energy and Environmental Design and is a nationally recognized green building rating system.

And the ratio of single-family BuiltGreen™ homes to new single-family construction permits rose from 18 percent in 2008 to 25 percent in 2009. This trend reflects both an increase in consumer demand and improved capacity of builders to achieve BuiltGreen™ performance requirements.

Influencing factors

Automotive fuel makes up the greatest proportion of total King County energy use. Land use patterns and gasoline prices are two of the factors that affect automotive fuel consumption. Reducing vehicle miles traveled and increasing fuel efficiency in vehicles are key to decreasing energy consumption in King County.

Because King County's electricity infrastructure includes six hydroelectric plants, residential and commercial sources emit fewer greenhouse gases than does the transportation sector. Energy conservation strategies and the county's leadership in residential and commercial green building have contributed to the decline in residential and commercial energy use.

Economic growth and population are two primary influences on the waste stream. As the county's population and economy grow, so does the amount of goods consumed and disposed of. Solid waste disposal levels have historically increased in prosperous times. The recent downturn in the economy may have contributed to reductions in recycling levels.

Market demand for green buildings is rising in this region, which contributes to the increased number of LEED™ certified buildings and the increased percent of new homes that are BuiltGreen™ certified in King County. Increased social awareness of the environmental benefits of recycling as well as increased regulatory requirements for recycling are factors that bear on household recycling rates.

DNRP response

Affecting the building, recycling, and disposal behaviors of King County residents requires a range of strategies, from collaborations with cities and non-profit partners to direct outreach to developers and residents. King County also delivers recycling and resource conservation education and outreach programs to schools.

WHAT CAN YOU DO?

At Home

Shoreline Practices for a Healthy Lake, River or Stream

Embrace Natural Yard Care

At Work

Reduce your runoff, get a fee discount

Learn Best Practices to reduce Stormwater Pollution

Erosion Control for Construction Sites

Apply Integrated Pest Management in your landscaping

Related Information

DNRP Budget And Organization Chart

King County Watersheds

Salmon and Trout Topics

Shoreline Master Program

Streams Water Quality Monitoring Data

Groundwater data

Normative Flow Studies

Interactive Hydrography Map

EPA: Lower Duwamish Watershed

King County encourages sustainable development and green building practices to help balance growth with protection of our region's valuable natural resources. King County also offers a variety of incentives for builders and developers to pursue BuiltGreen™ or LEED™ certification.

What you can do:

When considering building or remodeling projects

- **Learn and apply green building practices**

When making purchasing decisions, consider environmental impacts

- **Recycle more**
- **Dispose of solid waste properly**

More information about King County's Resource Consumption indicators is available by continuing to these indicators:

- **Building Energy Use**
- **Solid Waste**
- **Green Building**
  - **Built GreenTM Homes (Residential) - Green Building**
  - **Leadership in Energy Environment (LEED) certified Buildings (Commercial) - Green Building)**

Technical Notes

For definitions and more detail.

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King County Benchmarks

Solid Waste Division Facilities

Household Hazardous Waste Collection Options

Green Tools

Green Building & Low Impact Development

INDICATORS

ENERGY USE

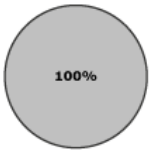
2011 Rating:

About this indicator: This is a 'place holder' for an indicator on building energy use that is currently under development.

Because energy use can have both a large upstream and downstream ecological footprint, it is an important component of the indicator of the resource consumption patterns of King County residents. Much of our household energy use is from (relatively clean) hydro-electric sources, though natural gas is used widely for residential furnaces, hot water tanks, and generating electricity during peak load periods.

If residential building energy use increases in King County, there are upstream impacts associated with water flow in rivers and extracting fossil fuels, and downstream impacts including air and climate pollution. By achieving lower per household energy use (through increasing efficiencies of buildings and appliances), and increasing renewable energy sources, our communities consume fewer resources and have a lighter impact.

Energy Use Components



Energy Use

- Meets/exceeds standard or improved from prior years
- Approaching standard or steady with prior years
- Below standard or decline from prior years
- Insufficient data at this time

King County is not a direct energy provider, and at this time does not have a current data set that depicts residential energy use patterns and trends in King County, but is developing this indicator and maps that show variations in residential energy use by neighborhood type.

Status: Residential energy use trends in King County are not yet tracked and reported on in a coordinated manner at this time, though DNRP is exploring ways of looking at both energy consumption and sourcing trends.

Influencing factors: A range of factors (that are technical, cultural, economic and political) influence energy use levels in King County homes.

DNRP response: King County Solid Waste Division promotes and supports residential green building practices through a partnership with the Master Builders of Snohomish and King Counties and by providing education and technical assistance to homeowners and developers.

Priority new actions: King County seeks to further reduce residential energy use by promoting green building practices in single and multi-family residential construction and remodeling.

What you can do:

- **If remodeling, buying or building a home, seek to achieve the energy points outlined in Built Green**

Technical Notes for Energy use

For definitions and more detail.

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WHAT CAN YOU DO?

At Home

Be a Salmon Watcher

At Work

Volunteer for a Habitat Restoration Project

Related Information

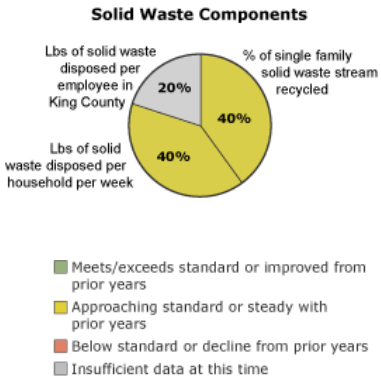
Salmon and Trout Topics

Shoreline Parcel Characterization

INDICATORS

SOLID WASTE DISPOSAL AND RECYCLING

2011 Rating: ⇔



About this indicator: Solid waste (garbage) disposal and recycling rates are significant indicators of resource consumption levels by King County residents and businesses. When a product has reached the end of its useful life and must be discarded, it usually is either disposed of at the King County landfill or taken to a recycling facility for transformation into another product. Every product made from recycled materials reduces the need for extraction of additional natural resources, which uses much more energy and results in higher greenhouse gas emissions than using recycled materials. King County's solid waste goals call for ongoing reductions in the amount of materials disposed at the landfill per person and per employee, and ongoing increases in the percentage of discarded materials that are recycled.

Status: Performance measures reported in the Department of Natural Resources and Parks (DNRP) performance report include 2011 targets for single-family recycling (55%) and solid waste disposal levels (25 pounds per household per week). The 2011 results met these targets, with a single-family recycling rate of 55%, and a single-family disposal level of 25 pounds per week. Overall solid waste disposal continued the decline that began in 2008. DNRP also sets targets for 2011 for solid waste disposal per employee of 23.5 pounds per week. 2011 data will not be available until June 2012, however in 2010 garbage disposal per employee was below the target at 20.9 pounds per week.

Influencing factors: Economic conditions have a significant influence on consumption levels and therefore solid waste disposal levels. However, as the economy began to recover in 2011, business waste actually decreased. This may have been due to businesses responding to costs pressures of the Great Recession which have caused them to streamline production processes and therefore reduce waste. This trend will likely continue into 2012 and beyond.

DNRP response: As of December 2011, over 99% of single-family garbage customers had food waste collection services available. In 2011, the Division's "Recycle More. It's Easy to Do." campaign included print, TV, radio, and online ads resulting in over 16.8 million media impressions; media events, including "A Banana Peel Gets Recycled" and "Spring Cleaning Week" earning 7.8 million impressions; and retail partnerships with Allied Waste Services, Bartell Drugs, and Round Table Pizza that promoted curbside recycling service and recycling of food scraps and food-soiled paper. The Bartell Drugs partnership provided discounts for compostable bags and countertop food waste containers for residents.

The campaign also conducted outreach and education to residents of seven cities with recycling rates under 35%, including the cities of Kenmore, Kent, Renton, SeaTac, Tukwila, and Maple Valley. Outreach and education activities included providing recycling information at community events, where questions were answered by the division's volunteer Master Recycler Composters (MRCs). In 2011, the MRCs spoke to 12,875 residents at community events in support of the Recycle More campaign.

Priority new actions: These and other efforts will continue in 2012. SWD is proposing a higher recycling target for 2012 (57%) because several cities have new garbage and recycling service contracts contributing to waste reduction and increased recycling. In addition, the "Recycle More. It's Easy to Do." campaign will have a new focus on conducting recycling education and outreach to the county's Spanish-speaking community, as Latino/Hispanic residents represent 15.2% of the total population and are the fastest growing segment of the population in King County. Other than English, Spanish is the most frequently spoken language in the county.

WHAT CAN YOU DO?

At Home

Be a Salmon Watcher

At Work

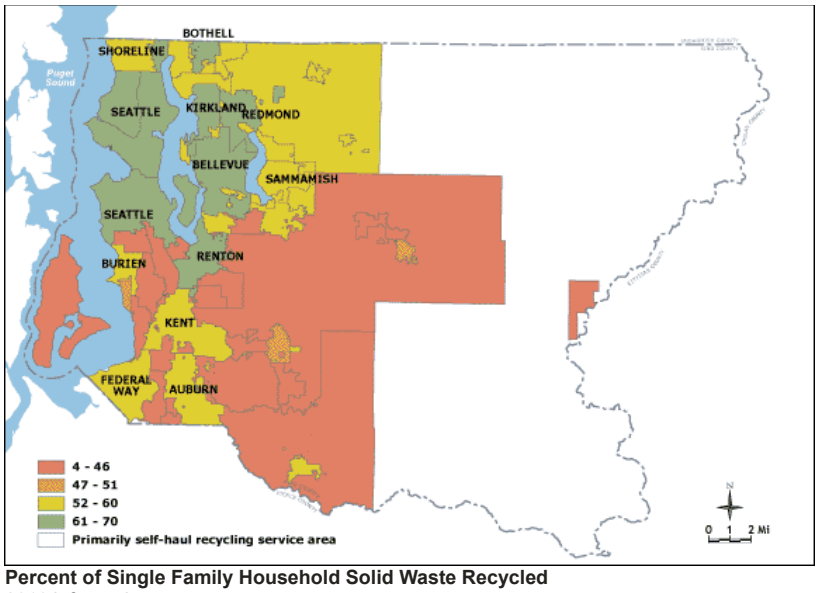
Volunteer for a Habitat Restoration Project

Related Information

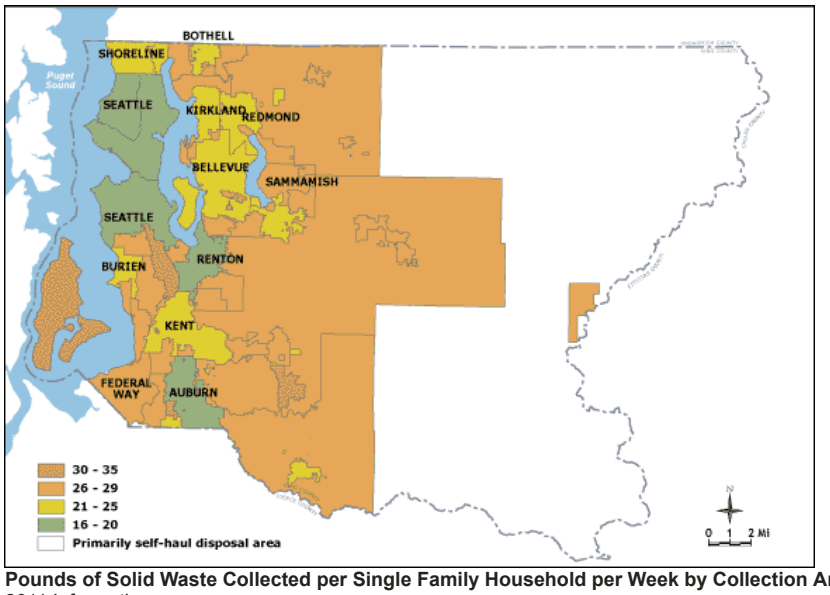
WasteMobile Stop distribution equity information

Salmon and Trout Topics

Shoreline Parcel Characterization



Percent of Single Family Household Solid Waste Recycled
2011 Information
Click to download the PDF version.



Pounds of Solid Waste Collected per Single Family Household per Week by Collection Area
2011 Information
Click to download the PDF version.

What you can do: Learn more about what you can do to reduce waste and increase recycling through the following resources.

- Garbage and recycling services
- Food waste and recycling
- Yard waste
- Electronics recycling
- Fluorescent bulb recycling
- Appliance recycling
- Textile recycling
- Recycling collection events
- Household hazardous waste collection

- **the Wastemobile**
- **Construction recycling**
- **Recycling other materials/items**
- **On-line materials exchange**
- **Green building**
- **Eco-consumer tips**

Technical Notes for Solid Waste Disposal & Recycling

For definitions and more detail.

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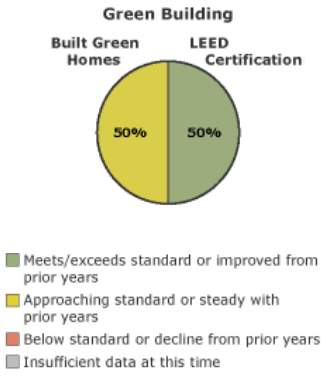
INDICATORS

GREEN BUILDING

2011 Rating: ⇔

About these indicators: These indicators represent the percent of residential units and the number of commercial buildings being built in King County that meet certain environmental standards. Since the construction, remodeling, and ongoing operations of buildings consume many resources, green building practices are an important indicator of the resource consumption patterns of King County residents. The standards being used are:

- For commercial buildings — the national Leadership in Energy and Environmental Design (LEED) Rating System™; and
- For residential buildings — the local BuiltGreen™ certification program.



The U.S. Green Building Council (USGBC) developed the LEED rating system to provide a benchmark for the design, construction, and operation of high performance commercial green buildings. LEED promotes a whole-building approach to sustainability by recognizing performance in key areas, including: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, locations and linkages, awareness and education, innovation in design, and regional priority.

The BuiltGreen™ program is a partnership between the Master Builders Association of King and Snohomish Counties, King and Snohomish Counties, and the City of Seattle. New houses and communities using the BuiltGreen™ standards must meet criteria from the program's checklist, including those related to site and water, energy efficiency, indoor air quality, and material selection.

What you can do

As a homeowner: Learn more about purchasing a green home and green home remodeling and maintenance through the following resources:

- Purchasing a green home
- Information about building and remodeling using green materials and practices
- Hiring a green remodel home professional
- Do-it-yourself home energy audits
- Do-it-yourself home energy assessments

As a builder or design professional: Build your capacity for green design and construction methods by connecting to local professional organizations, such as the Cascadia Green Building Council or the Northwest EcoBuilding Guild.

- Cascadia Green Building Council
- Northwest EcoBuilding Guild
- U.S. Green Building Council (USGBC)
- Green Building Certification Institute (GBCI)

Solid Waste Division (SWD)

Ratio of new single-family residential units certified annually by Built Green™ at the 3-to 5-Star levels to total new construction permits issued annually for single-family units county-wide

WHAT CAN YOU DO?

As a homeowner:

Learn more about purchasing a green home, green home remodeling and maintenance by following up on the following resources:

For home energy audits 2.4MB PDF

For information about building and remodeling using green materials and practices

For purchasing a green home

As a builder or design professional: Build your capacity for green design and construction methods by connecting to local professional organizations, such as the Cascadia Region Green Building Council or the NW Eco-building Guild.

Related Information

Salmon and Trout Topics

Shoreline Parcel Characterization

About This Indicator: The Built Green Program is a partnership between the Master Builders Association of King and Snohomish Counties, King and Snohomish Counties, and the City of Seattle. New homes being constructed to Built Green standards must meet criteria from the program's checklist, which includes categories in site and water, energy efficiency, indoor air quality, and material selection.

2010 Results: 21 percent of new single-family homes are Built Green 3-5 Star

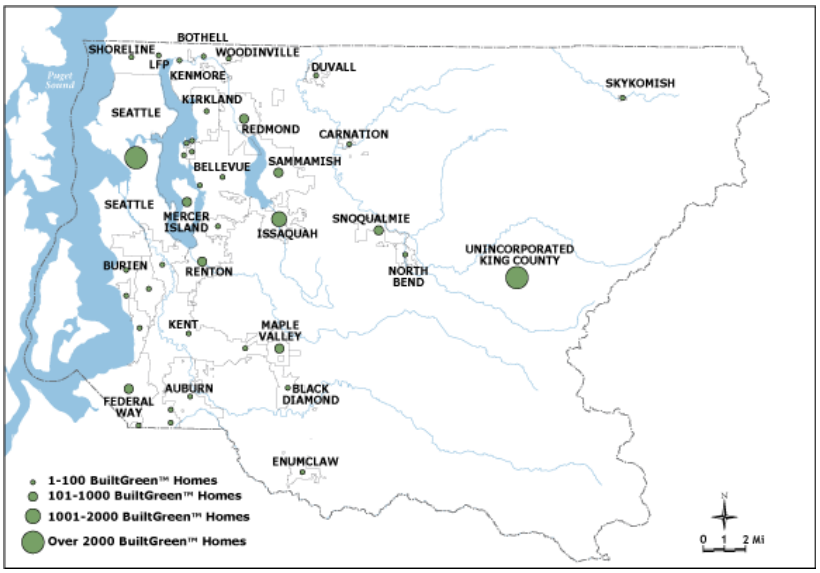
2011 Results: 11 percent of new single-family homes are Built Green 3-5 Star

Influencing Factors: The Built Green Program's share of certified homes relative to total residential building permits fell from 21% in 2010 to 11% in 2011, but this finding is due in part to the challenges of measuring market share for Built Green homes. Because the timeline of building projects does not follow the calendar year, projects are not always completed in the year they are permitted. In an attempt to address the lag time between permitting and building completion, this indicator uses current year Built Green data and prior year permit data, but even with this adjustment, the ratio is not fully accurate. Real estate sales figures over the same timeframe indicate anecdotally that Built Green's market share remained even over the two year period.

Strategy Going Forward: In 2012, Built Green is expecting a slight increase in single-family construction and will continue to focus on multi-family housing certifications. Current trends indicate a greater increase in this housing type, particularly apartment and townhome development. This focus aligns with King County's equity and social justice initiative which seek to promote housing for all people that is safe, affordable, high quality, and healthy.

Technical Notes:

For definitions and more detail.



Number of single family 3-to 5-Star Built Green™ certified homes in King County 2000 - 2011
Click to download the PDF version.

Ratio of new multi-family residential units certified annually by Built Green™ at the 3-to 5-Star levels to total new construction permits issued annually for multi-family units county-wide

About This Indicator: The Built Green Program is a partnership between the Master Builders Association of King and Snohomish Counties, King and Snohomish Counties, and the City of Seattle. New homes being constructed to Built Green standards must meet criteria from the program's checklist, which includes categories in site and water, energy efficiency, indoor air quality, and material selection.

2011 Results: 25 percent of new multi-family homes are Built Green 3-5 Star

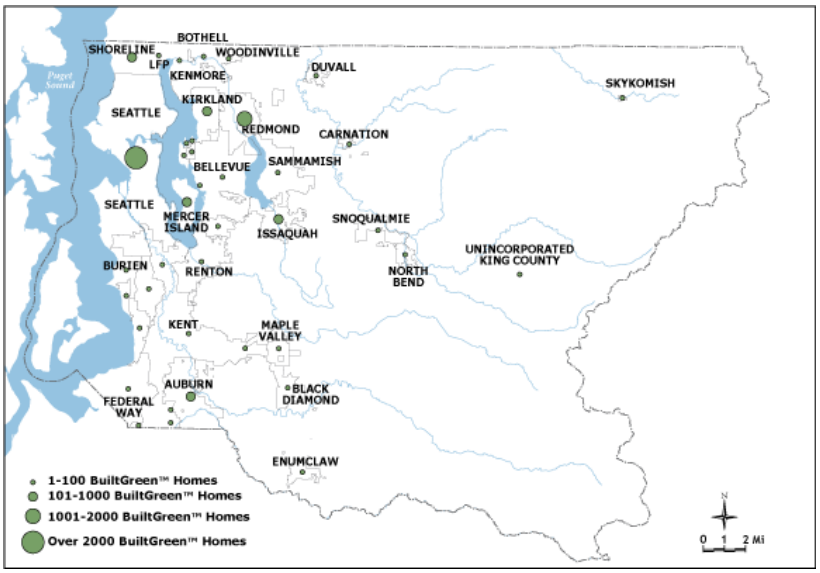
Influencing Factors: The Built Green Program's share of certified multi-family projects relative to total buildings permitted decreased somewhat from 29% in 2010 to 25% in 2011. Because the timeline of building projects does not follow the calendar year, projects are not always completed in the year they are permitted in, and the completion timeline for large multi-family projects can be especially long. In an attempt to capture the lag time between permitting and building

completion, this indicator uses current year Built Green data and permit data from two years prior, but even with this adjustment the indicator is not fully accurate.

Strategy Going Forward: In 2012 Built Green will continue to make multi-family housing certifications a priority. Current trends indicate an increase in this housing type, particularly apartment and townhome development. This focus aligns with King County's equity and social justice initiative which seeks to promote housing for all people that is safe, affordable, high quality, and healthy.

Technical Notes:

For definitions and more detail.



Number of multi family 3-to 5-Star Built Green™ certified homes in King County 2000 - 2011
Click to download the PDF version.

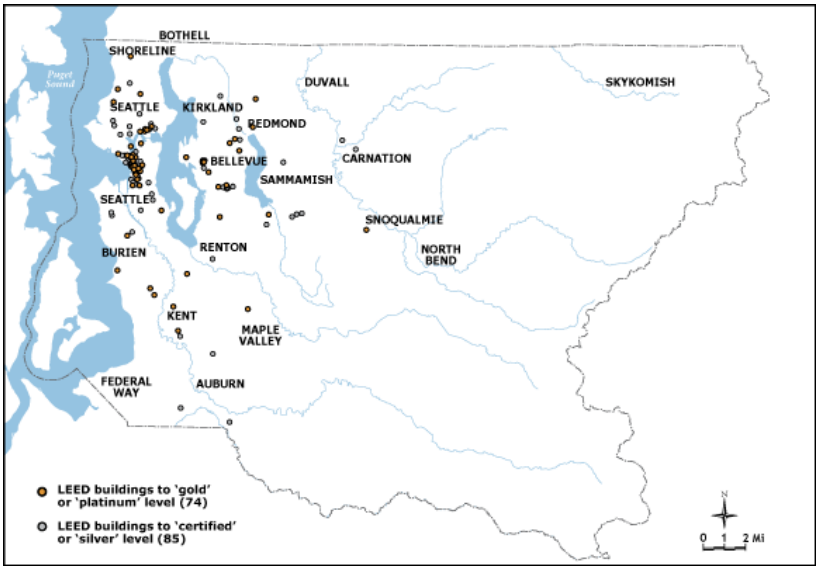
Number of buildings in King County achieving a Leadership in Energy and Environmental Design (LEED) rating

About this indicator: This indicator presents the number of commercial buildings built in King County that achieved a Leadership in Energy and Environmental Design (LEED) certification rating in 2011. The U.S. Green Building Council (USGBC) developed the LEED rating system to provide a benchmark for the design, construction, and operation of high performance commercial green buildings. LEED recognizes performance in key areas of human and environmental health, including: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, locations and linkages, awareness and education, innovation in design, and regional priority.

2011 Results: 46 (32 Seattle, 14 rest of King County)

Influencing Factors: Green building practices are influenced by increased consumer demand, public and consumer awareness, land use and building code policies, incentives, technical assistance, and increases in the number of local companies and practitioners skilled in the design, construction, and maintenance of high performing green buildings.

Strategy Going Forward: In 2012, the King County GreenTools green building program will offer technical assistance to county and city stakeholders to support the development of more environmentally-friendly and healthy LEED buildings. Examples will include eco-charrette facilitation, material consultation, and green building practice-specific trainings (i.e., Integrative Process, Commissioning, and Life Cycle Cost Analysis). Providing eco-charrette facilitation can help project managers incorporate more sustainable development practices as well as achieve more LEED credits and higher certification ratings.



LEED Certified Buildings
2003 — 2011
Click to download the PDF version.

Technical Notes:

For definitions and more detail.

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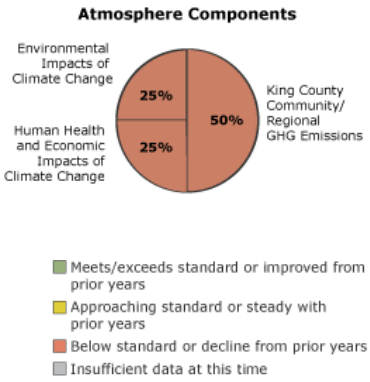
INDICATORS

CLIMATE CHANGE

2011 Rating:

Indicator

This indicator includes greenhouse gas (GHG) emissions for all King County residents and businesses and local data about the environmental, human health and economic impacts of climate change.



Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions such as carbon dioxide and methane are the primary cause of recent climate change. One indicator focuses on measuring progress towards reducing all types of GHG emissions from all activities attributable to King County residents, businesses, and other entities. A second indicator provides detailed information about how King County government is reducing emissions associated with operations.

Environmental Impacts of Climate Change

Important climate change related shifts in King County's physical environment have been observed in recent years, and are documented in this indicator. King County is tracking these changes in the local environment to help assess the severity of local climate-influenced impacts.

Increasing air and water temperatures, acidifying marine waters, increasing fall flooding, rising sea levels, decreasing snow pack, and decreasing summertime river flows are examples of changes that have been observed in King County; these trends are consistent with expected and projected local climate change impacts, and many other impacts are also occurring.

Human Health and Economic Impacts of Climate Change

Climate change will have long-term consequences for both public health and the economy in King County; some of these impacts are already occurring. King County is tracking human health and economic impact indicators that are showing improvements in air quality but also increasing natural disasters, decreasing salmon populations, and negative heat-related impacts to human health. These observed changes are consistent with the projected local impacts of climate change, and many other impacts are also likely.

- Green House Gas Emissions
  - GHG — King County Community Level
  - GHG — King County Government Operations
- Environmental Impacts of Climate Change
- Human Health and Economic Impacts of Climate Change

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WHAT CAN YOU DO?

At Home

What you can do as an individual

At Work

What businesses can do

Related Information

King County climate change response

It's Easy Being Green

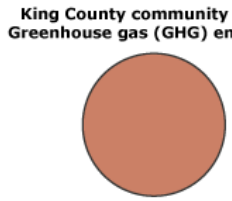
Localize sustainability

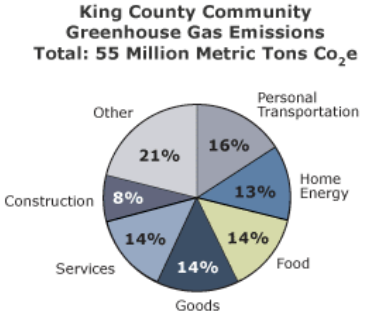
INDICATORS

GREENHOUSE GAS EMISSIONS

2011 Rating: ↓

GHG Emissions for all King County Residents and Businesses





Consumption Based Methodology
Local and Global Emissions

About this indicator: Greenhouse gas (GHG) emissions such as carbon dioxide and methane are the primary drivers of human caused climate change. This indicator focuses on measuring progress towards reducing all types of GHG emissions from all activities attributable to King County residents, businesses, and other entities. For detailed information about how King County Government is reducing emissions associated with government operations, see the **KingStat Climate Protection Performance Measure**.

King County, the City of Seattle, and the Puget Sound Clean Air Agency — with support from the U.S. Department of Energy - recently updated King County's community GHG emissions inventories and also developed a framework and methodology for more easily assessing progress toward meeting County GHG reduction goals. The **2012 Greenhouse Gas Emissions in King County Report** includes an updated geographic-plus based 2008 inventory, a consumption-based 2008 inventory, an ongoing tracking framework, and several related deliverables. The report informs individuals, businesses, and local governments about the most important sources of community emissions and provides important new information relevant to addressing these sources. The tracking framework includes a "core" scope of emission sources that will be estimated annually using readily available data on local building energy, vehicle transportation, and waste. The geographic-plus inventory includes emissions associated with goods and services produced in King County (regardless of where they are consumed), whereas the consumption-based Inventory includes emissions associated with goods and services consumed here (regardless of where they are produced).

GHG Reduction Goals for the King County Region

The 2010 King County Strategic Plan established environmental sustainability as one of King County's eight goals. The plan outlines objectives to reduce climate pollution and prepare for the effects of climate change on the environment, human health and the economy and to minimize King County's operational environmental footprint.

Washington State Law RCW 70.235.020 requires that by 2020 Washington State reduce overall greenhouse gas emissions to 1990 levels and that by 2050 emissions are further reduced to fifty percent below 1990 levels.

The King County Comprehensive Plan directed that the county collaborate with other local governments to reduce greenhouse gas emissions in the region to eighty percent below 2007 levels by 2050 and incorporate climate change considerations into county plans, programs and projects among other related policies and goals.

Drivers: In King County, GHG emissions are primarily caused by fossil fuel use (gasoline and diesel) for transportation and to a lesser but significant extent to heat our buildings (natural gas and heating oil). Combusting fossil fuel (e.g. coal) to produce electricity is also a source of GHG emissions, although in King County, because of the prevalence of hydropower, this is less of a source than in many other regions. Other important sources include methane emissions from landfills, wastewater treatment, and livestock. King County is also responsible for emissions that occur outside of region in production and transport of goods and services that are consumed in the region.

Status: Data from the 2010 core emissions assessment for the King County region (all residents and businesses) show emissions increased roughly 1% since 2008 to 16.5 million metric tons of carbon dioxide equivalent (million MTCO2e), primarily due to population growth. While overall emissions increased, per person annual greenhouse gas emissions that are part of the core measurement framework decreased roughly 2% compared to 2008 and are down almost 5% compared

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to 2003. Significant declines in per-person vehicle travel and slight declines building energy use help to explain the decrease in emissions per person.

Producing goods, food, and services contributes more than half of the GHG emissions associated with consumption in King County. This underscores the importance of purchasing habits on emissions. Simply by buying products, King County residents, governments, and businesses are contributing to climate change through the emissions released to make these products. Data from 2008 showed that over 60 percent or 34 million MTCO2e of King County's Consumption-based emissions are associated with producing goods and services, more than a quarter (15 million MTCO2e) are associated with using them (e.g. driving a car or using an appliance), and relatively small shares are associated with transporting, selling, and disposing them.

Existing response: King County has a long history of adopting policies and implementing strategies promoting environmental and economic sustainability and responding to climate change. **The 2012 Strategic Climate Action Plan**, **2012 Climate Motion** and **2010 Energy Plan** are recent examples. The **climate change policy page** summarizes the history of King County climate change related policy and legislation. The **annual King County Sustainability Report**, transmitted by King County Executive Dow Constantine each June, documents annual highlights and next steps related to these efforts. Additionally, many of King County's climate change related project and program accomplishments are highlighted on the **King County Climate Change website**.

Technical Notes for GHG Emissions for all King County Residents and Businesses

For definitions and more detail.

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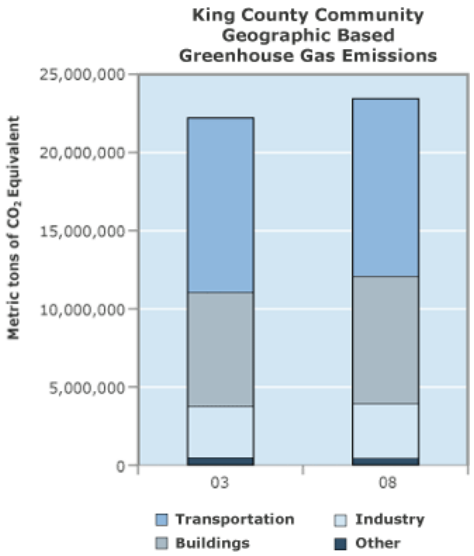

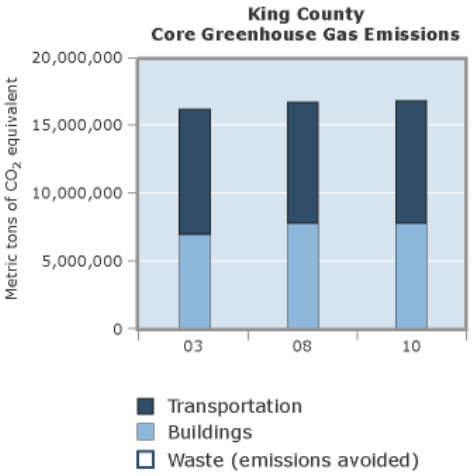

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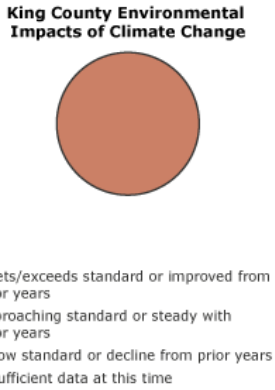
INDICATORS

ENVIRONMENTAL IMPACTS

King County Environmental Impacts of Climate Change

2011 Rating:



Important climate change related shifts in King County's physical environment have been observed in recent years, and are documented in this indicator. King County is tracking these changes in the local environment to help assess the severity of local climate-influenced impacts. King County is also tracking **Human Health and Economic Impacts of Climate Change** of **Greenhouse Gas Emissions at the Community Level** and the **Climate Protection Response of King County Government Operations**.

Increasing air and water temperatures, acidifying marine waters, increasing fall flooding, rising sea levels, decreasing snow pack, and decreasing summertime river flows are examples of changes that have been observed in King County; these trends are consistent with expected and projected local climate change impacts, and many other impacts are also occurring.

Nine key environmental indicators impacted by climate change are briefly described below:

Stream temperatures	During the period 2000-2011, the moving 7-day average of the daily maximum temperatures for the majority of the 63 stream and river sites in King County exceeded the 16°C temperature standard established for the protection of salmon habitat.
Large lake temperatures	The trend in annual average lake temperatures, including Lake Washington and Lake Sammamish, is toward higher average water temperatures.
Summer stream flows	Trend analysis of long-term King County river discharge records (1962-2008) in nine unregulated rivers and the naturalized flow record for the Green River at Howard Hanson Dam provided strong evidence for declining trends in summer flow (July - September) and some evidence that severe storms and floods were occurring more frequently during late fall months.
Rainfall	Annual precipitation increased 14% for the period 1930-1995 in the Pacific Northwest region. There is some evidence from local weather and gauging river stations that severe storms and floods are occurring more frequently. A local study indicated a general trend toward higher precipitation in November and lower precipitation during summer. In addition, results suggest increases in the magnitude, duration, frequency, and earlier timing of extreme precipitation.
Sea level rise	Oceans rose approximately 8 inches from 1870-2008, an average of 0.06 inches per year. Recent years have shown an increase in the rate of change. At a station in Seattle, WA, the mean sea level trend of monthly mean sea level data(1898 to 2006) is 2.06 mm/year (equivalent to a change of 0.68 feet in 100 years).
Air Temperature	In the Pacific Northwest, average annual temperatures rose 1.5°F in the last century.
Snowpack	Widespread declines in springtime snowpack have occurred in much of the North American west between 1925 and 2000. Between about mid-century to 2006, decreases of about 15-35% in snow water equivalent in the Cascades Mountains were observed.
Sea surface temperatures	Global sea surface temperatures increased over the 20th century at an average rate of 0.12°F per decade. Over the last 30 years, global a surface temperatures have risen at a faster rate of change of 0.21°F per decade. Records from a nearby station in Victoria, BC indicate a long-term warming trend of 1.7°F since 1921 and 1.8°F since 1950.
Ocean acidification	Over the past 250 years, oceans have absorbed about 550 billion tons of CO_2 emissions, or about 30% of total carbon emissions created by human activity. Globally, ocean surface water pH is estimated to have fallen about 0.1 pH units since the beginning of the industrial revolution.

See the References below for details supporting the information presented above. For more information about local climate

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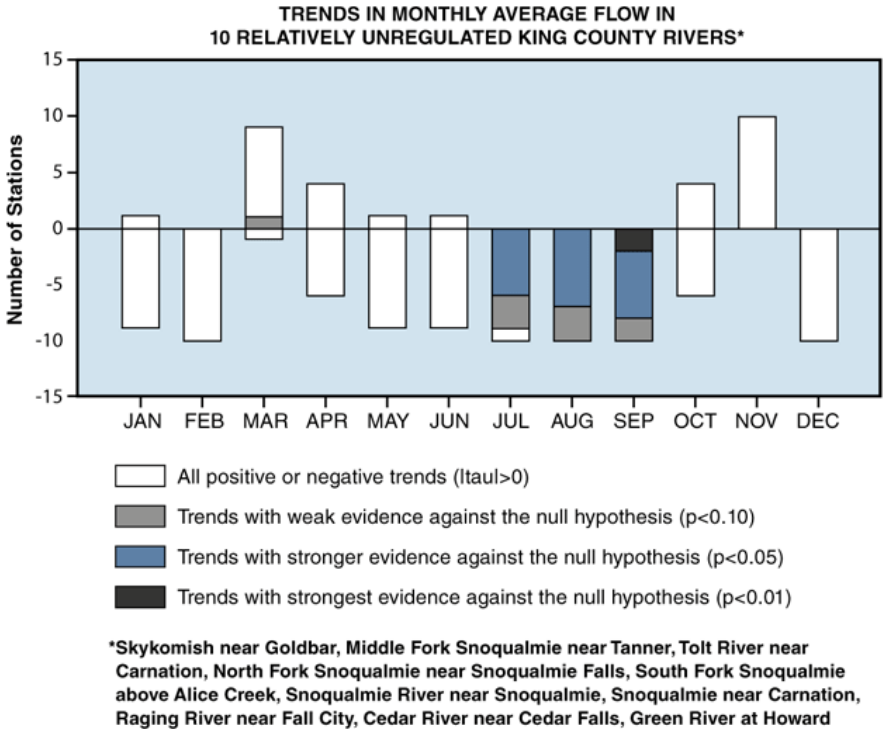
change impacts, see the **University of Washington's Climate Impacts Group**. In addition, more detailed data is presented below for two of these impacts – Stream Flows and Sea Level Rise:

Stream Flows

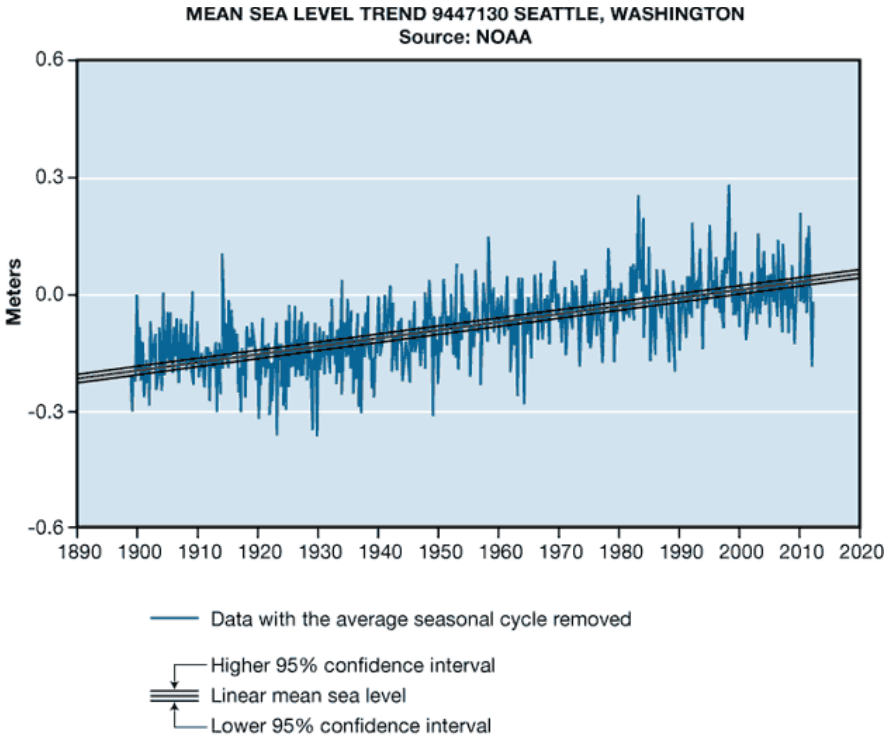
Between 1962 and 2008, a strong downward trend in summertime water volumes in King County rivers was observed at all 10 local unregulated river gauging stations. During this same period, there was also some evidence from these gauging stations and from eight King County weather stations that severe storms and floods were occurring more frequently during late fall months.



Frequency of trend direction and relative evidence of trends for monthly average discharge (1962-2008). Mostly strong and very strong downward trends were observed in summer flow during July, August and September (KC WLRD. 2010).

Sea level rise

Between 1898 and 2006, the mean sea level trend in Seattle, WA was a 2.06 mm/yr rise (equivalent to 0.68 feet/100years) (NOAA. 2012).



Mean sea level trend in Seattle, WA (1898-2006). A rising sevel trend of 2.06 mm/yr (0.68 feet per100 years) was observed at a station in the Seattle, WA area. (NOAA. 2012).

Other impacts on the local environment related to climate change include:

- Increases in runoff during storm events;
- Declines in summer runoff due to glacier loss;
- Lowering of groundwater levels;
- Increases in urban heat island effects;
- Losses or increases in losses of wetland and nearshore habitat acreage;
- Changes in the timing and duration of growing season;
- Decreases in species abundance
- Increases in species morbidity; and
- Increases in biological invasions and occurrences of harmful algal blooms.

Technical Notes for Environmental Impacts

For definitions and more detail.

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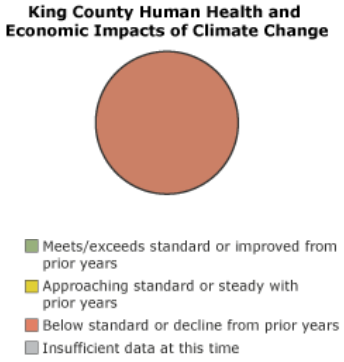
INDICATORS

HEALTH AND ECONOMIC IMPACTS

2011 Rating:

King County Human Health and Economic Impacts of Climate Change



Climate change will have long-term consequences for both public health and the economy in King County; some of these impacts are already occurring. King County is tracking human health and economic impact indicators that are showing improvements in air quality but also increasing natural disasters, decreasing salmon populations, and negative heat-related impacts to human health. These observed changes are consistent with the projected local impacts of climate change, and many other impacts are also likely. King County is also tracking **Environmental Impacts of Climate Change** as well **Greenhouse Gas Emissions at the Community Level** and the **Climate Protection Response of King County Government Operations**.

It is important to note that the human health and economic impacts being tracked by King County are affected by multiple factors in addition to climate change. For example, the frequency of natural disasters is also affected by where people live and work and how prepared they are for storms. However, climate change has been shown to be an important influence on each of the indicators presented. Tracking changes in these indicators is critical to assessing how severe local climate change-influenced impacts are and also how well the King County community is doing to reduce climate change related risks and impacts.

Five key human health and economic indicators impacted by climate change are briefly described below:

Human Health & Heat Impacts	Data from the greater Seattle area indicate that between 1980-2006 the risk of death and mortality due to all non-traumatic causes and circulatory causes rose for the citizens 45 years and older during the hottest summertime days.
Air Quality	Recent data in King County shows the number of days per year with air particulates exceeding the Particulate Matter Size 2.5 daily health standard has been decreasing over the last 10 years from about 60 days in 2000 down to less than 10 days in 2010.
County Operations	The intensity and duration of a flooding in King County rivers has significant impacts to public and private property and infrastructure and the economy. Changes in flooding also directly affect government operations. Over the short period for which data is available (since 2007), data show a trend in increasing hours of operation of the King County Flood Warning Center.
FEMA disasters	Flood, severe storm and coastal storm related FEMA disasters in the King County have been occurring more frequently in the most recent decade.
Fish	Wild juvenile chinook salmon abundance in King County watersheds have been decreasing since the early 2000s. Overall, wild chinook salmon escapement results in 2010 were far below the respective recovery goals Ð at only 7% of the recovery target.

See the References below for details supporting the information presented above. For more information about local climate change impacts, see the **University of Washington's Climate Impacts Group**. In addition, more detailed data is presented below for two of these indicators - Human Health and FEMA disasters:

Human Health and Heat Impacts

One climate change relevant indicator relates to heat impacts to human health. In King County observations indicate increasing human mortality due to increasing heat events and an upward trend of local air temperatures. In the greater Seattle area, between 1980 and 2006 mortality rates for all non-traumatic causes, circulatory causes and respiratory causes increased, and were highest for persons 85 years of age or older. In the greater Seattle area, risk of death due to all non-traumatic causes and circulatory causes rose for the overall population aged 45 years and above beginning on day 1 of heat

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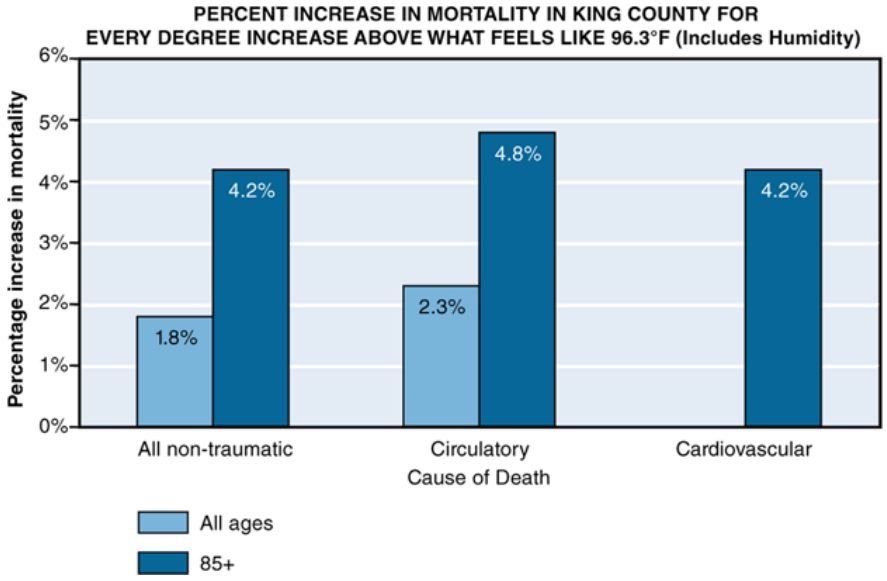
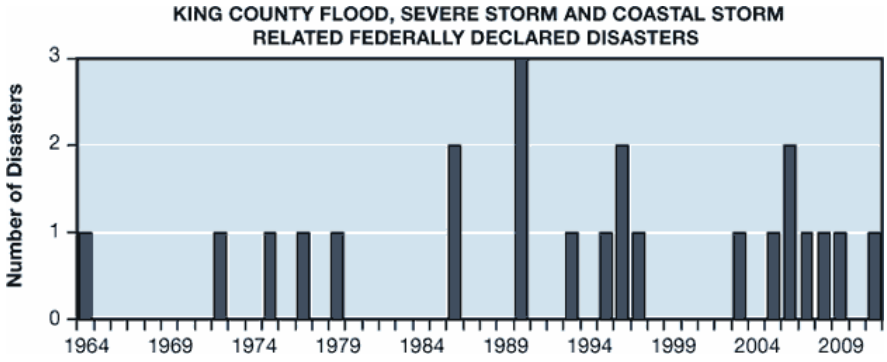
events, peaked on day 4, and declined slightly for days 5 and beyond (Jackson et al. 2010). Additionally, a significant increase in hospitalizations for King County citizens has been observed with increasing temperatures, especially for the elderly (UW SPH. 2011).



Percent increase in mortality in King County for every degree increase above what feels like 96.3°F (Data reviewed from 1980-2006) (UW SPH. 2011).

FEMA Disasters

Another climate change relevant indicator is the number of flood, severe storm and coastal storm related FEMA federally declared disasters that occur in King County. These types of weather related federally declared disasters have been occurring more frequently over the last decade, and are related to climate change related risks such as flooding. However, it is important to consider that the frequency of natural disasters in King County is affected by many factors in addition to climate change - such as where people live and work and how prepared they are for storms.



Raw, unedited data from FEMA's National Emergency Management Information System (NEMIS) (FEMA. 2012).

Other impacts on the local human health and economy that are related to climate change include:

- Increases in number of restricted activity days for vulnerable populations due to increasing heat and air quality impacts;
- Increases in damage to roads, rails, runways and private or public property due to flooding, sea level rise, salt water intrusion or storms;
- Changes in human migration in or out of the area;
- Decreases in farmland production and commercial and tribal harvesting of wild shellfish and fish resources;
- Shortages in irrigation and drinking water supplies;
- Increases in pests in forests and crops;

- Shortages in irrigation and drinking water supplies;
- Increases in summer hydropower and water supply demands;
- Increases in viral activity (e.g. West Nile virus); waterborne and food borne illnesses; and
- Increases in number of hospitalizations and emergency room visits due to heat or air quality stress.

Technical Notes for Mean Annual Temperature

For definitions and more detail.

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Performance Measures

COMMUNITY AND ENVIRONMENTAL INDICATORS					PERFORMANCE MEASURES			
Aquatic Environment	Land & Resources	Health & Safety	Resource Consumption	Climate Change	Environment	People & Communities	Fiscal and Economic	Quality Workforce

DNRP 2014 PERFORMANCE MEASURES

These measures present the degree that DNRP programs are achieving their stated targets. Because of the breadth of DNRP programs, the department's goals and performance measures address topics that are environmental, social and fiscal in nature.

DNRP distinguishes between environmental indicators and performance measures based on the degree of the agency's influence. Measures that have many contributing factors are included as indicators, while measures that are strongly influenced by DNRP policies, programs, and practices are considered performance measures.

Performance Measures

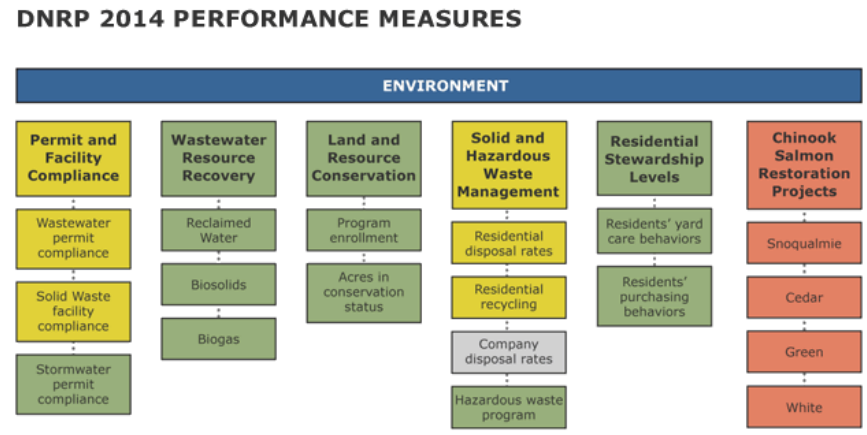
DNRP organizes performance measures under its three goal areas:

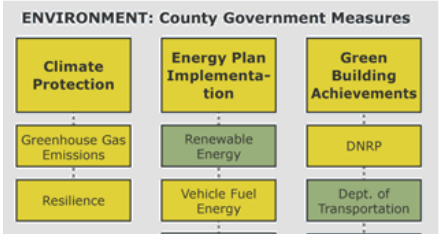
- **Environment**
- **People and Communities**
- **Fiscal and Economic**
- **Quality Workforce**

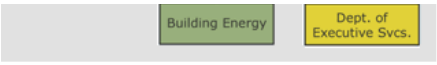
Under each goal are four to six objectives, or roll-up measures, each of which has a pie chart for a quick summary of performance in this area. Below the summary/roll-ups are details of individual measures and, where relevant, technical notes with specific information about data sources or anomalies with the measure information.

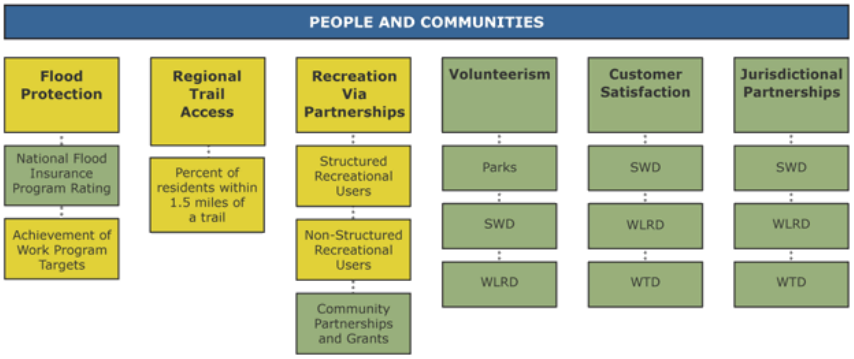
Results on DNRP performance measures use a simple red/yellow/green/gray designation, where:

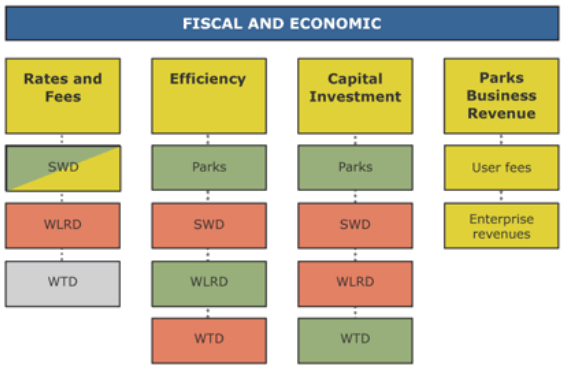
- Green signifies meeting or exceeding a stated target;
- Yellow signifies results within 10 percent of the target;
- Red signifies the need for improvement; and
- Gray signifies insufficient data at this time.











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Related Information

- DNRP Budget And Organization Chart
- DNRP Annual Report - (5.4 Mb PDF)
- Natural Resource Lands
- Solid Waste Recycling
- DNRP Equity

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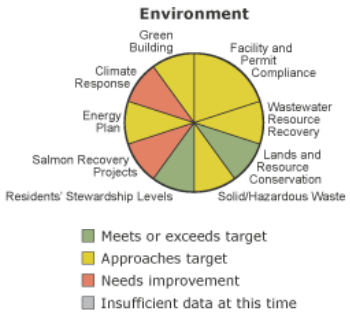
PERFORMANCE MEASURES

ENVIRONMENT

This roll-up measure summarizes the degree DNRP is achieving its **Environmental goal**:

Minimize waste and emissions, maximize resource re-use and recovery, and protect and restore habitats, ecological functions and aquatic conditions.



2013 results

Achieving DNRP's environmental goal requires sustained improvements and achievements in operations, program delivery, and community engagement. The span of DNRP environmental goal and objectives is broad, including climate, energy, green building, salmon recovery, waste management and recycling, land conservation and facility operations.

In 2013, areas under this goal where DNRP performed well:

- Land and Resource Conservation
- Solid and hazardous waste management
- Residents' stewardship levels

Objectives where in 2013 DNRP performance approaches target:

- Permit and Facility Compliance
- Wastewater Resource Recovery
- Green Building Achievements

Areas where in 2013 DNRP performance needs improvement:

- Climate Response
- Energy Plan
- Chinook Salmon Recovery Projects

Key influencing factors

Land and resource conservation targets were hit through enhanced purchasing practices and more effective conservation outreach. Successes within the land and resource conservation objective are due in part to the strong relationships the program has with forest and farm landowners.

Salmon recovery, climate response, and energy plan objectives did not achieve targets in part because King County has set a very high bar for success and many parties need to mobilized to see improvements in these areas.

Strategies going forward

With an increased focus on multi-functional capital projects, DNRP will implement its flood hazard management plan to advance both public safety goals and ecological improvements. King County is implementing improved methods for tracking progress on capital projects, including the use of scorecards which address performance such as energy efficiency.

DNRP's land and resource conservation efforts are expanding to better use all available tools, including public acquisition of key parcels and promotion of enhanced stewardship on private lands, plus innovative solutions such as King County's nationally-acclaimed transfer of development rights program.

DNRP will continue to improve processes and systems to ensure its wastewater plants, transfer stations and landfills, and the

Related Information

DNRP Budget And Organization Chart

Brightwater Project

Interactive Stormwater Projects Map

stormwater program in unincorporated King County meet or exceed regulatory requirements.

More information about DNRP environmental results can be seen as these pages:

- **Facility/Permit Compliance**
- **Wastewater Resource Recovery**
- **Land and Resource Conservation**
- **Solid/Hazardous Waste Mgt**
- **Residents Stewardship**
- **Chinook Salmon Recovery Projects**
- **Climate Protection**
- **Energy Plan Implementation**
- **Green Building Achievements**

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PERFORMANCE MEASURES

FACILITY/PERMIT COMPLIANCE

2013 Rating:

About this measure: This is one of DNRP's highest priority measures, as it shows how facilities and operations are performing across an array of regulated activities. Performance requirements for transfer stations, landfills, and storm and wastewater facilities are detailed, complex and critically important for protecting the health of our environment and our public health and safety.

DNRP tracks and reports on the degree regulatory requirements are met or exceeded through a variety of mechanisms, including treatment plant effluents sampling, air emissions monitoring, and on-site inspections and audits. To serve various programs, DNRP has environmental research scientists on staff and maintains an award winning water quality laboratory for analytical support.

Wastewater Treatment Division (WTD)

WTD Air Quality Permit Compliance

About this measure: This is a measure of compliance with air quality limits and conditions as regulated via Puget Sound Clean Air Agency (PSCAA) permits and orders of approvals on WTD's regional wastewater plants and offsite stations.

2013 Results: 100 percent

2013 Target: 100 percent

2014 Target: 100 percent

Influencing Factors: Compliance factors for air permits include establishing achievable conditions/limits via PSCAA permit process, quality of design and installation of chemical systems and control equipment, on-going condition of control equipment, balancing maintenance response, providing appropriate O&M training, clear and full understanding of all limits and operating conditions, and staying abreast of changing regulations.

Strategy going forward: WTD created an air quality compliance team to oversee and facilitate compliance issues at all WTD facilities. This compliance team will continue an active role in responding to permit compliance requirements for the Brightwater Treatment Plant's air quality control program.

An Air Quality Environmental Management System (AQ-EMS) was developed and approved by PSCAA for South Plant, to enhance the implementation of compliance, odor control, and best practices initiatives, including identifying training and safety issues. WTD will continue to evaluate modifications of equipment and operating changes to improve air quality and improve reliability of equipment operation at treatment plants.

The strategies are working as division has achieved a 100 percent compliance mark this year and a 99.9 percent compliance mark for the prior few years. Having achieved the 100 percent target, the division will continue implementing strategies to meet permit requirements.

WTD Effluent Limit Compliance (NPDES Permits)

About this measure: This is a measure of compliance with National Pollution Discharge Elimination System (NPDES) permit limits for the county's major regional wastewater treatment plants.

2013 Results: 100 percent. The West Point and South Treatment Plants achieved 100 percent compliance with NPDES permit effluent limits in 2013.

Both treatment plants are anticipated to receive the Platinum Peak Performance Awards from the National Association of Clean Water Agencies (NACWA) for 2013.

2013 Target: 100 percent

2014 Target: 100 percent

Related Information

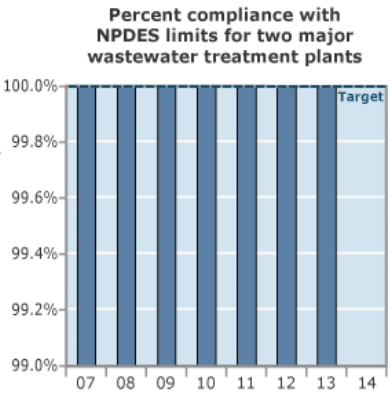
Wastewater
- Wastewater facility distribution equity information
- Wastewater Treatment Division

Solid Waste
- Solid Waste Division

Stormwater
- Drainage complaints equity information
- Stormwater Topics
- Interactive Stormwater Projects Map
- Ecology's link to 2007 Municipal Stormwater NPDES Permit

Influencing factors: The Washington State Department of Ecology issued new NPDES permits to both plants in 2004. South Plant's limits remained the same while West Point's limits included more stringent requirements and some technical reporting changes.

Strategy going forward: All WTD sections contribute strategies to ensure success in NPDES compliance, such as: performing preventive maintenance, providing employees with training and tools, developing asset management plans for major equipment maintenance, and many other coordinated NPDES compliance efforts across the division.



Number of NPDES Permit Violations Resulting in Enforcement Actions — Treatment and Conveyance

About this measure: This measure accounts for the number of permit violations resulting in enforcement actions taken against WTD by the Washington Department of Ecology (WDOE) for violations of our NPDES permit related to wastewater treatment and conveyance. This includes any violations resulting in Notices of Violation (NOV) or fines received from Department of Ecology. NOV's or fines can result from sewage overflows, ongoing operational problems which lead to NPDES non-compliance, failure to comply with reporting requirements or other permit non-compliance issues.

2013 Results: 0

2013 Target: 0

2014 Target: 0

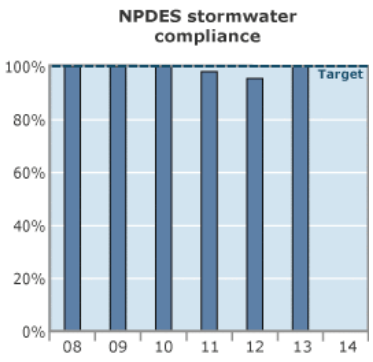
Influencing Factors: The weather and our ability to remain operationally "at the ready" are the biggest factor in avoiding permit violations. Large volume rain events push our infrastructure to maximum capacity. Under these conditions, all systems must perform at the highest design levels, so that minor problems don't result in permit violation. Secondly, ensuring that staff has the proper training, an understanding of relationships amongst various components and accurate information to assess conditions contribute to preventing violations.

Strategy going forward: Additional staff training has been implemented and staffing has been adjusted to allow for staff to arrive at these facilities quicker during rain events. Operations modifications have been made and several projects have been undertaken or are currently underway to improve disinfection, sampling reliability and increase system reliability.

Upgrades to the control system used to operate the treatment plans and conveyance system are currently underway. These upgrades will allow for better monitoring and controlling of facilities and represent some of the ongoing efforts to remain in compliance.

Number of NPDES Construction Stormwater Permit Notices of Violation

About this measure: The Department of Ecology requires NPDES Construction Stormwater Permits for any project that will disturb more than an acre of land by clearing, grading, excavating or stockpiling of fill material, if there is any possibility that stormwater could run off the site and into surface waters. This measure accounts for any WTD violations of its NPDES Construction Stormwater Permits.



2013 Results: 0

2013 Target: 0

2014 Target: 0

Influencing Factors: WTD strives to maintain compliance with its NPDES Construction Stormwater Permits by monitoring construction sites and ensuring that soils are properly covered or handled to prevent erosion or sediments from polluting surface waters via stormwater runoff.

Strategy going forward: WTD will continue to closely monitor construction sites and maintain protocols for prevention of stormwater pollution on all construction sites. Compliance staff will work with construction managers to respond to problems and develop mitigation strategies and site housekeeping measures to prevent uncontrolled sediment and stormwater runoff from construction sites.

Percent compliance with reclaimed water permits

About this measure: This measure looks at the percentage of compliance with reclaimed water permits at WTD's regional wastewater plants from the Department of Ecology. Permit conditions govern the location, rate, water quality and purpose of use.

There is currently only one active reclaimed water permit for WTD's South Treatment Plant.

2013 Results: 100 percent

2013 Target: 100 percent

2014 Target: 100 percent

Influencing Factors: King County's reclaimed water meets strict Class A standards set by the state departments of Health and Ecology. Complying with the permit requirements involves managing a number of biological, chemical and mechanical processes to control the quality of the reclaimed water.

There are two key factors that can lead to permit violations. One is an operational issue, as permit levels for turbidity and pH are strongly dependent on reliability of the control system and the on-line instrumentation that control turbidity, feed water and chlorine and disinfection levels.

The second typical problem involves disinfection failures due to other chemicals interfering with adequate levels of bleach, or a faulty chlorine residual monitor resulting in inadequate disinfection or an inability to verify levels.

Strategy going forward: King County invests in research and demonstration projects that support the safe and effective use of reclaimed water in our region. Continued and ongoing efforts are underway at South Plant, looking at ways to increase the plant's capacity for reclaimed water and improve the ability to reliably meet permit standards.

Water and Land Resources Division (WLRD)

Surface water management NPDES stormwater permit compliance

About this measure: The Washington State Department of Ecology administers the National Pollutant Discharge Elimination System (NPDES) permit to ensure compliance with the federal Clean Water Act. This permit addresses the negative impacts of storm water on natural resources by requiring specific actions including facility maintenance, controls on development, code enforcement, retrofit projects, public education and outreach, and scientific sampling and analysis of the water quality of surface waters. This measure shows the degree of compliance with eleven categories in the permit for unincorporated King County.

2013 Target: 100 percent compliance

2013 Results: 100 percent compliance

2014 Target: 100 percent compliance

Influencing factors: King County's population is growing and more open space is being developed resulting in more impervious surface area and storm water that runs off into creeks, streams and rivers. This storm water runoff carries pollutants into water bodies and to Puget Sound. Both increased flows and dirty water can cause damage to natural habitats, affect water temperature and receiving water quality that can negatively affect fish, wildlife populations and opportunities for human enjoyment.

The State Department of Ecology has issued a new NPDES Permit and requirements effective August 1st, 2013. The 2013 permit is more stringent and has more conditions than the 2007 permit. Full NPDES compliance was achieved during 2012 and 2013; including terms and conditions with DOE's Agreed Order

Strategy going forward: King County increased the storm water rate for 2013 and 2014. Additional staff and resources are being directed to the program so King County can effectively and efficiently implement the new and enhanced NPDES state permit compliance standards.

WLRD will continue making surface water management activities more efficient while prioritizing how surface water revenues are spent.

Solid Waste Division (SWD)

Percent of Health Department inspection reports that do not result in a notice of violation for solid waste facilities.

2013 Results: 100%

2013 Target: 100%

2014 Target: 100%

Influencing Factors: Good results were achieved because the Health Department generally works with the Solid Waste Division (SWD) to correct potential notices of violation so they do not have to be issued and SWD works quickly to correct potential violations.

Strategy Going Forward: Efficient facility operation and maintenance will continue in 2014, as well as good communication with the Health Department.

Percent of scheduled actions (inspections, sampling and reporting) completed quarterly to comply with State Industrial Stormwater General Permit requirements

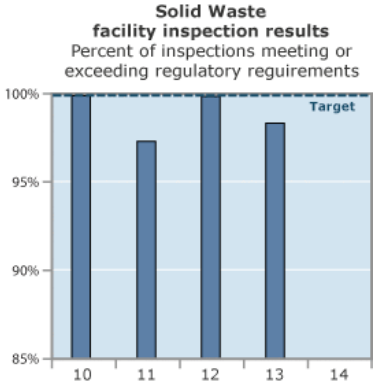
2013 Results: 100%

2013 Target: 100%

2014 Target: 100%

Influencing Factors: In 2013, all scheduled inspections, sampling and reporting were completed.

Strategy Going Forward: In 2014, staff will continue to prioritize the workload to complete required actions.



Percent of stormwater monitoring parameters analyzed not exceeding Permit Effluent Benchmarks or Limits.

2013 Results: 95%

2013 Target: 100%

2014 Target: 100%

Influencing Factors: Vehicle traffic leaving the active landfill area onto paved roads during wet periods can track debris particles which migrate into and overwhelm stormwater settling ponds. The unsettled particles are discharged from the ponds and contribute to increased turbidity that leads to some benchmark exceedances. Additionally, two required permit sampling events were missed during the year due to limited staffing resources, and as per the sampling permit, analytes not measured are counted as exceedances. There are 11 analytes measured per permit sampling event.

Strategy Going Forward: In 2014, staff will continue to prioritize the workload to complete required actions.

Technical Notes

For definitions and more detail.

Percent of completed landfill surface emissions monitoring actions that do not result in a Notice of Violation from the Puget Sound Clear Air Agency (PSCAA).

2013 Results: 100%

2013 Target: 100%

2014 Target: 100%

Influencing Factors: Good results were achieved in 2013 through efficient operation of the landfill gas system and maintenance of the landfill cover system.

Strategy Going Forward: Efficient operation and maintenance will continue in 2014.

Technical Notes

For definitions and more detail.

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- Mistakes to fix

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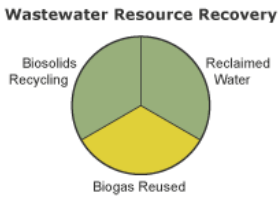
PERFORMANCE MEASURES

WASTEWATER RESOURCE RECOVERY

2013 Rating: ⇔

Wastewater Treatment Division (WTD)



Reclaimed water volumes met

About this performance measure: This measure tracks the amount of wastewater that DNRP's Wastewater Treatment Division converts into resource — reclaimed water.

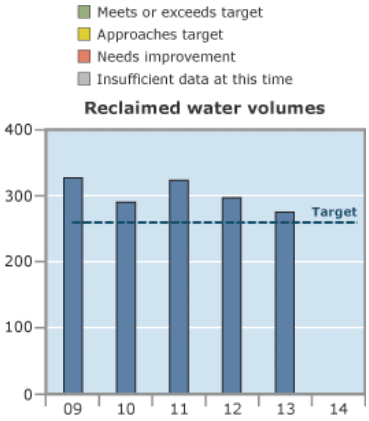
2013 Results: 275 Million Gallons (MG)

2013 Target: ≥260 MG/yr

2014 Target: ≥260 MG/yr

Influencing factors: Both WTD treatment plants continue to reclaim all water needed for their own operations and any needed by customers. South Plant continued to use reclaimed water for nearly all their compatible internal process needs and irrigation demand.

Strategy going forward: WTD's success in converting wastewater into a resource will depend on the cost of providing treatment and conveyance for reclaimed water relative to the cost of using existing sources and/or providing new sources of surface and groundwater. WTD will be developing a regional water supply plan that will address the role of reclaimed water in meeting the region's diverse water supply needs.



Loop (biosolids) reuse targets met

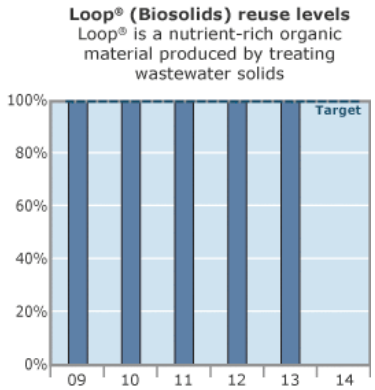
About this performance measure: This measure represents WTD's ability to market and recycle biosolids, now branded as **Loop**, a nutrient-rich organic material produced by treating wastewater solids.

2013 Results: 100 percent

2014 Target: 100 percent

2014 Target: 100 percent

Influencing factors: Two projects at West Point Treatment Plant to improve quality and reduce digester problems are in the planning stages. These projects will help WTD maintain 100 percent reuse of Loop. Although 100 percent of Loop available was reused, the measure requires ongoing attention to ensure this high rate. Having reliable year-round application and storage sites will have the greatest impact on this measure.



Strategy going forward: WTD's strategy for continuing to meet the target of 100 percent Loop reuse has several components that include:

- Ensuring availability of proven, reliable reuse sites and customers for 150 percent of Loop production.
- Securing a short-term emergency storage site for occasional winter use.
- Continuing an aggressive industrial pretreatment program to maintain current low metals levels.
- Maintaining an active research and demonstration program that responds to current issues and questions and evaluates potential new uses for Loop.

Biogas Recovered for Reuse

Related Information

- WTD facilities equity information
- Water Supply in King County
- WTD Reclaimed Water Program
- Biosolids

About this performance measure: This measure represents WTD's ability to convert biogas (carbon dioxide and methane gas), which are natural byproducts of the wastewater treatment process, into heat and energy for use inside the treatment plants through a process known as cogeneration. WTD aims to capture and reuse at least 75% of available biogas for energy and heat production.

2013 Results: 60.5 percent

2013 Target: ≥75 percent

2014 Target: ≥75 percent

Influencing factors: The lack of a cogeneration facility at South Plant continues to make meeting the target challenging for South Plant. In 2013 this was exacerbated when gas had to be flared for high water content. This happened twice in 2013. The problem has been eliminated after repairs and modifications were made to the scrubber system that removes water and impurities.

In 2013, West Point Treatment Plant also suffered from the lack of a cogeneration facility. However, the system has been running all of 2014, which improves the likelihood of WTD meeting the 75% target in 2014. West Point also was impacted by an inflow of salt water that created a chemical/biological imbalance in the digesters. Several months were required to bringing the digesters back into normal operating parameters.

Strategy going forward: The Waste-2-Energy project has been tested and commissioned at the West Point Treatment Plant will harness digester gas, a renewable or "green" source of energy, as fuel for cogeneration facilities to provide heat and power at the plant. A study is being conducted to determine if a similar system should be designed and constructed at South Plant.

WTD is also reviewing the overall strategy of using some of the energy at the plant and selling the remaining energy to Puget Sound Energy or Seattle City Light. A new strategy is being investigated to determine whether it would be more cost effective to use all the energy at the plant to further reduce the amount of electricity purchased.

King County is committed to recovering and reusing the products of the wastewater treatment process at its regional clean-water facilities. The capability to beneficially reuse products increases the efficiency of the wastewater treatment plants, offers environmental sustainability and saves the ratepayers money.

Technical Notes

For definitions and more detail.

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PERFORMANCE MEASURES

LAND AND RESOURCE CONSERVATION

Water and Land Resources Division (WLRD)

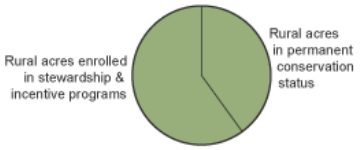
Conservation of Natural Lands

About this measure: This measure has two sub-measures to provide a status report on the effectiveness of land acquisition, stewardship and incentive programs administered by the Water and Land Resources Division.

The two sub-measures, their weights, and 2013 results are:

2013 Rating:

Land and Resource Conservation



- Meets or exceeds target
- Approaches target
- Needs improvement
- Insufficient data at this time

60% New privately-owned rural acres* with stewardship plans or enrolled in incentive programs.
This includes properties with farm, forest or rural stewardship plans and properties enrolled in the Public Benefit Rating System or Timber Land, Forest and Agriculture current use taxation programs.

2013 Target: 500 acres

2013 Results: 660 acres

2014 Target: 500 acres added

40% New public and private rural acres in permanent conservation. This includes all land in public ownership, and privately-owned lands with conservation easements.

2013 Target: 500 acres

2013 Results: 1,568 acres

2014 Target: 500 acres

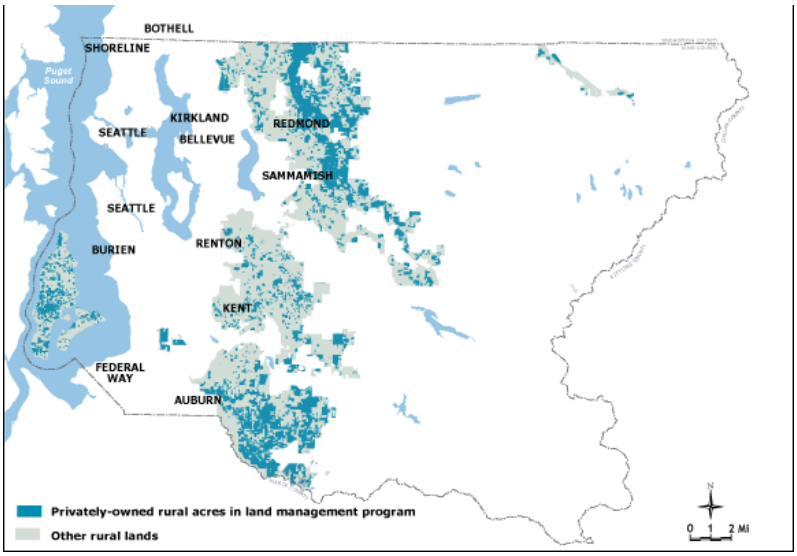
*For this measure, "rural acres" refers to all rural and agriculture-zoned land, including Vashon Island and excluding the Forest Production District. Stewardship and conservation programs for private land are designed to work in concert, thus a single property may have a combination of current use taxation, farm or forest plan, and other conservation actions on the land over many years. For this measure, properties are counted only once, in the first year of participation.

Influencing factors: Budget allocations, regulatory and policy changes, economic conditions and opportunity for acquisition all play a role in land conservation and acquisition activities. Implementing policy plans, such as the King County Comprehensive Plan, salmon restoration plans, flood hazard reduction plan, or the climate change adaptation plan, often identify or call for specific land acquisition and protection, outreach, and education toward improving stewardship and changing environmental behavior.

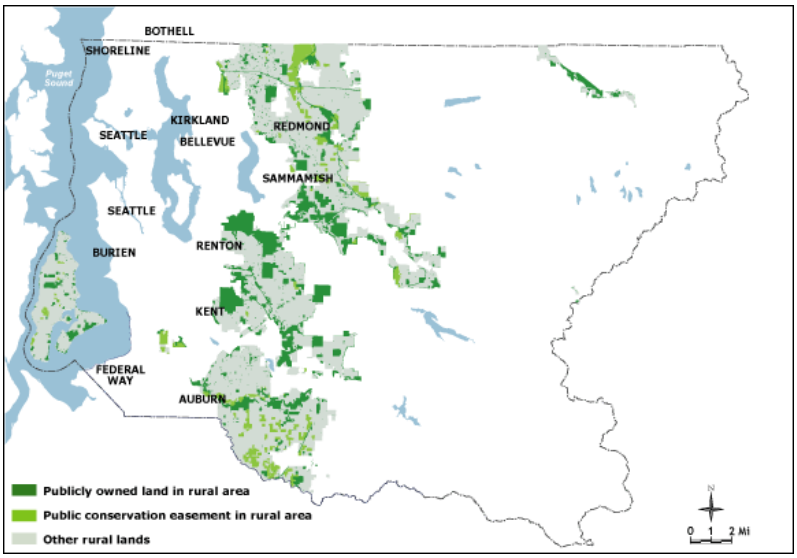
Strategy going forward: Continue to encourage stewardship and conservation on privately-owned lands through effective program delivery and strategic use of funds to acquire high priority lands that will protect environmental quality for future generations.

Related Information

- Natural Resource Lands
- Land Stewardship
- Resource Protection Initiatives
- Transfer of Development Rights
- Agriculture and Forestry
- Water and Land Resources Division



Rural acres in land management program
Click to download the PDF version.



Rural acres in conservation status
Click to download the PDF version.

Technical Notes

For definitions and more detail.

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PERFORMANCE MEASURES

SOLID/HAZARDOUS WASTE MANAGEMENT

2013 Rating:

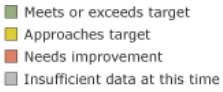
Solid Waste Division (SWD)

Percent of single-family curbside solid waste stream that is recycled

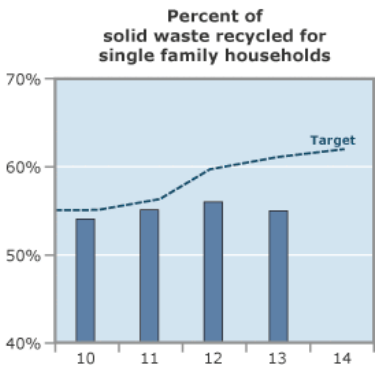
2013 Results: 55%

2013 Target: 61%

2014 Target: 62%



Influencing Factors: The 2013 target was set at 61% because the Solid Waste Division (SWD) has calculated a 61% single-family recycling rate in 2013 as on track to achieve a 64% single-family recycling rate in 2015. SWD has estimated that single-family recycling must hit 64% in order for the County to achieve an overall municipal solid waste recycling rate of 55% in 2015, as established in the draft 2013 King County Comprehensive Solid Waste Management Plan.



However, increases of this magnitude are unlikely to occur without changes in comprehensive plan policies to prohibit disposal of recyclables in residential garbage, which will require agreement by cities and other stakeholders. The slight decrease in the recycling rate is probably explained by weather-related reductions in yard waste generation. Pounds per household of recyclables excluding organics remained flat.

In 2013, The Solid Waste Division's "Recycle More. It's Easy to Do." campaign included outreach partnerships with six suburban cities with residential recycling rates of less than 35%, including the cities of Auburn, North Bend, Des Moines, Black Diamond, Covington, and Maple Valley. Outreach activities included providing recycling information at community events where questions were answered by staff and volunteers of SWD's Master Recycler Composter (MRC) program. In 2013, the MRC program made 14,088 public contacts in support of the Recycle More campaign. The campaign also included a month-long retail partnership with Bartell Drugs and BioBag which promoted recycling of food scraps and food-soiled paper. Bartell Drugs provided discounts for compostable bags and countertop food scrap containers for residents. As a result of this partnership, sales of these recycling tools were increased by 7% compared to sales during the same period in 2012. And in 2013 the campaign also included TV, radio, Facebook and online advertising, resulting in 16.5 million media impressions.

SWD continued its Spanish language curbside recycling education campaign, "Recicla Mas Es Facilisimo." This Spanish language curbside recycling outreach and education campaign employs culturally competent tactics which reach members of King County's Hispanic/Latino community using spokespersons who speak their language while connecting with community members in places they frequent. In 2013, the campaign continued to expand its Spanish language website, improved its education materials in Spanish, and recruited and trained volunteer education staff — the Facilitadoras de Reciclaje — who teach recycling basics to residents. In 2013, the Facilitadoras spoke to 1,948 Hispanic/Latino community members about recycling at community events and small gatherings. Recicla Mas also formed media partnership with local Hispanic/Latino including TV, radio, and print media to further recycling education in this community.

Strategy Going Forward: SWD believes it is unlikely that the County will achieve its target of 62% in 2014. However, we believe that this is the rate that needs to be achieved in order to keep us on track toward achieving the Comprehensive Plan goal of 55% overall municipal recycling in 2015. SWD will continue to have discussions with cities and other stakeholders regarding whether policy changes, such as mandatory recycling, should be pursued in order to increase recycling rates. SWD will continue educational efforts to increase participation in single-family recycling and organics collection programs. We expect that these efforts will result in continued increases in the recycling rate, but will not get us to 61%.

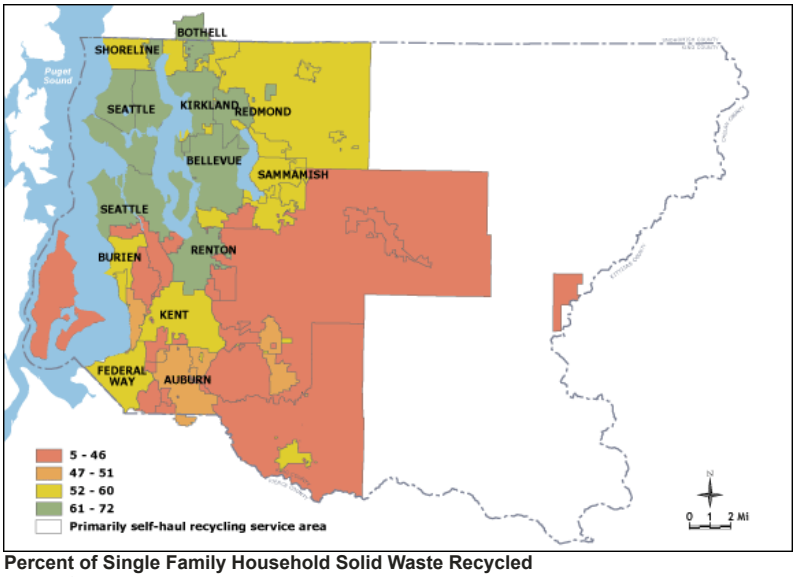
The program efforts described above in "Influencing Factors" will continue in 2014. The "Recicla Mas! Es Facilisimo" Spanish language campaign will continue with its third year of conducting recycling education and outreach to the county's Spanish-speaking community. The program will continue to use culturally competent outreach tactics, including expanding the Spanish language education volunteers — the Facilitadoras de Reciclaje. SWD will continue its Hispanic media partnership, update and expand its web content and expand its relationships within the Hispanic/Latino community.

Related Information

- Wastemobile and Take-it-Back network stores equity information
- What do I do With...?
- Solid Waste Recycling
- Garage & Yard Sales
- Household Online Materials Exchange
- Industrial Materials Exchange
- Solid Waste Business Services
- Hazardous Waste Disposal

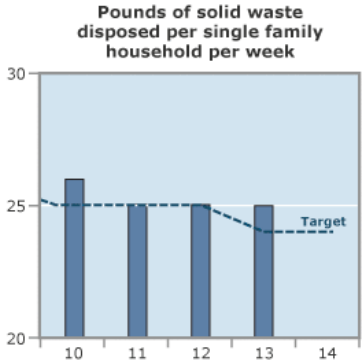
Technical Notes

For definitions and more detail.



Percent of Single Family Household Solid Waste Recycled
2013 Information
Click to download the PDF version.

Pounds of solid waste disposed per single-family household per week



2013 Results: 25 pounds per week

2013 Target: 24 pounds per week

2014 Target: 24 pounds per week

Influencing Factors: Pounds of solid waste disposed per single-family household per week in 2013 remained basically unchanged from 2012 levels. The lack of progress may be explained in part by increased consumer purchasing due to improvements in the economy.

In 2013, The Solid Waste Division's "Recycle More. It's Easy to Do." campaign included outreach partnerships with six suburban cities with residential recycling rates of less than 35%, including the cities of Auburn, North Bend, Des Moines, Black Diamond, Covington, and Maple Valley. Outreach activities included providing recycling information at community events where questions were answered by staff and volunteers of SWD's Master Recycler Composter (MRC) program. In 2013, the MRC program made 14,088 public contacts in support of the Recycle More campaign. The campaign also included a month-long retail partnership with Bartell Drugs and BioBag which promoted recycling of food scraps and food-soiled paper. Bartell Drugs provided discounts for compostable bags and countertop food scrap containers for residents. As a result of this partnership, sales of these recycling tools were increased by 7% compared to sales during the same period in 2012. And in 2013 the campaign also included TV, radio, face book and online advertising, resulting in 16.5 million media impressions.

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Strategy Going Forward: SWD believes that continued reductions in residential disposal are achievable with current policies and programs. SWD expects the use of organics collection to continue to grow, and that outreach campaigns will continue to result in increased diversion of recyclables from disposal. In addition, the program efforts described above in "Influencing Factors" will continue in 2014. The "Recicla Mas! Es Facilisimo" Spanish language campaign will continue with its third year of conducting recycling education and outreach to the county's Spanish-speaking community. The program will continue to use culturally competent outreach tactics, including expanding the Spanish language education volunteers - the Facilitadoras de

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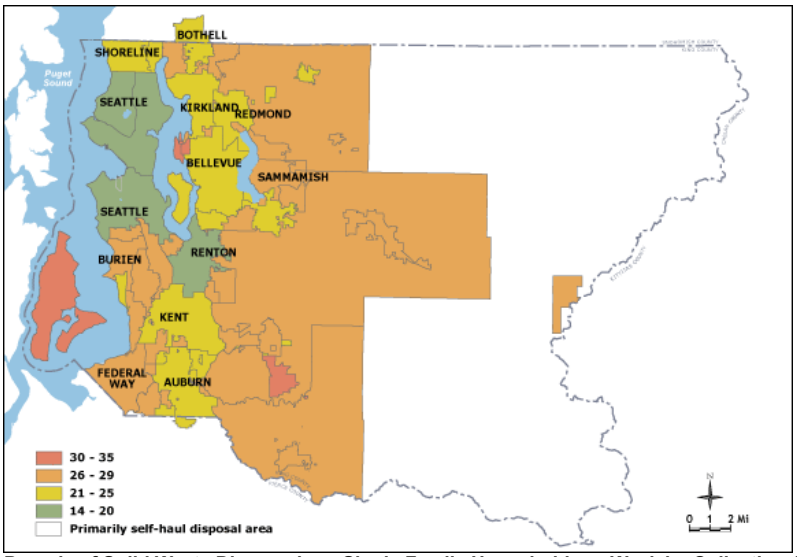
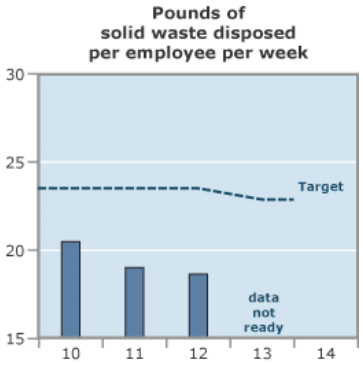
Technical Notes

For definitions and more detail.



Pounds of Solid Waste Disposed per Single Family Household per Week by Collection Area
2013 Information
Click to download the PDF version.

Pounds of solid waste disposed per employee per week countywide



2012 Results: 18.64 pounds per week

2012 Target: 23.5 pounds per week

2013 Target: 23.5 pounds per week

Influencing Factors: This measure lags by one year because employee data are not available until mid-2014. In 2012, garbage disposal per employee was 21% lower than the county's target of 23.5 pounds per employee per week. Reasons for the decrease include only modest employment growth (a gain of about 15,200 jobs, or 2.3%) and a decrease in tonnage, potentially caused by increased recycling and waste reduction. Since most of the businesses in the county are located in cities, the Solid Waste Division (SWD) provides support to cities in the form of Waste Reduction and Recycling (WRR) grants to improve city recycling programs. SWD also hosts a web site that provides information on workplace recycling, business waste prevention activities, and recycling for property managers.

Strategy Going Forward: The strategy for 2013 is to continue work with cities to increase recycling services for businesses and institutions. These efforts will include continuing to provide WRR grants to cities and continuing the Green Schools Program to help schools recycle more.

Technical Notes

For definitions and more detail.

Residents' recycling and disposal behavior via EBI

About this measure: The King County Environmental Behavior Index (EBI) tracks and reports on the adoption of selected environmental behaviors of King County residents. In 2004, 2006, 2008 and again in 2011, 1000 randomly selected respondents in King County participated in a telephone survey and reported on their household's behaviors related to:

- Yard Care
- Recycling And Disposal
- Environmentally Friendly Purchasing

Understanding residents' awareness and behavior guides a more cost-effective targeting of outreach efforts and helps evaluate whether the efforts to improve these behaviors are making a difference.

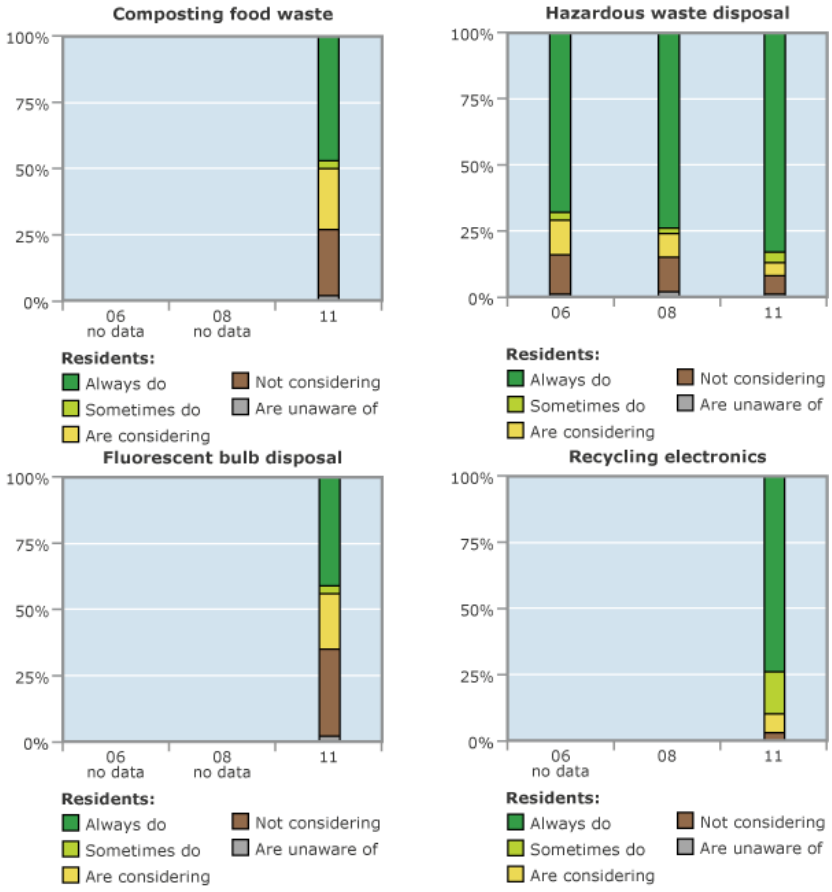
The 2011 Environmental Behavior Index was conducted in spring of 2011. The findings about yard care and purchasing behavior can be found under the performance measure on solid and hazardous waste management, which is **here**.

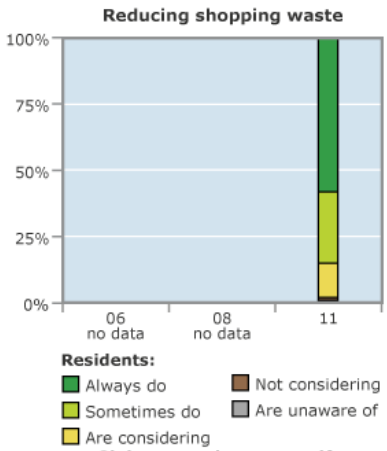
Below are details on findings for residential recycling and disposal behaviors.

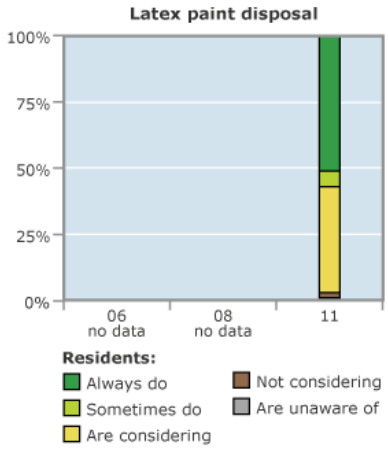
2011 results: The 2011 survey of residents' recycling and disposal behaviors indicates that use of recycle containers at home is high and improving, as is proper disposal of paints, kitchen grease and prescription drugs. Proper disposal of compact fluorescent light and tubes is low and is slightly declining.

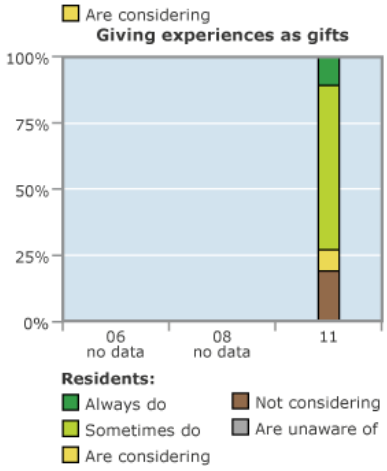
Influencing factors: In 2011, the Seattle City Council passed an ordinance making it illegal and punishable by fine to put selected recyclables in the garbage. There was significant media coverage of this new legislation, which likely influenced both awareness and behavior of residents throughout King County.

Strategy going forward: SWD will continue to work with cities to allow food waste recycling with yard debris. The SWD is partnering on a recycling education campaign, "Recycle More, Its Easy to Do" and is making further improvements to its Web site about general and food waste recycling.









Seattle - King County Local Hazardous Waste Program

About this measure: This measure is a composite index of actions aimed at reducing exposure to hazardous materials. Below are descriptions of 5 key 2009 program areas of the Local Hazardous Waste Management Program and a rating of the degree that targets for these actions were met.

Waste pharmaceuticals project

Completed the largest unused medicine collection pilot project in the United States, and initiative to enact a product stewardship law for the safe and secure take-back of unused pharmaceuticals.

2006 results: 7 sites

2007 results: 25 sites

2008 target: 37 sites

2009 results: Completed two-year pilot project in October 2008. Group Health Cooperative and Bartell Drugs continue to collect waste medicines at 37 sites across the state. Other sites at police and sheriff offices have been set up to address controlled substances. Since the project began, more than 27,000 pounds of unused medicines have been collected for safe and secure destruction. Washington legislature did not pass proposed product stewardship bill in 2009 or 2010 sessions.

Influencing factors: The pilot project demonstrated the feasibility of collecting used medicines safely and securely at pharmacies. Logistics surrounding controlled substances continue to present major challenges.

Strategy going forward: Pilot project successfully tested the pharmacy take-back model. Group Health and Bartell Drugs continue to offer service in the interim, as are a growing number of law enforcement sites to address controlled substances. Our focus is now on passing legislation that would require drug manufacturers to take over the long-term collection of unused medicines via a product stewardship system.

Nail salon English-as-a-second language business project

The purpose of this project is to work with nail salon workers for whom English is a second language to reduce exposure to hazardous chemicals.

2009 results: Developed "healthy nail salon" guidelines in collaboration with the Environmental Coalition of South Seattle, Community Coalition for Environmental Justice, U.S. EPA and other partners. Tram Duong, ECOSS partner, has provided more than 200 technical assistance visits to salons in King County. In addition we have worked with beauty schools, nail supply distributors and Washington Department of Licensing to increase awareness of safe chemical handling in salons.

Influencing factors: Many connections have been made with the nail salon industry and with Vietnamese-American community to build trust, research concerns, and develop safer alternative products and practices. Working with local NGO partners helps reach an audience skeptical of working directly with government.

Strategy going forward: Continue outreach to salons where Vietnamese-Americans are owners or predominant workers. Increase level of contacts and reach within this community. Explore EnviroStars certification criteria to promote best management practices.

Healthy schools project

The focus of this project is to reduce or eliminate exposures to key hazardous chemicals in all King County schools.

2009 results: 69 school inspections were completed, looking for mercury, lead glazes and high risk chemicals. Elemental mercury continued to be found in schools, and was removed. Explosive old chemicals such as crystallized ethyl ether were also uncovered and safely removed. Washington state included our chemical restrictions in its revised K-12 Health and Safety Guide.

Influencing factors: We had hoped that we could rely on past inspections done through the Rehab the Lab project to assure that schools were, for example, mercury-free, but have found instead that pockets of old products continue to turn up. In addition to science lab supplies, our focus is turning to art supplies, where lead ceramic glazes, hexane-acetone glues and other high hazards are common.

Strategy going forward: Keep working with individual schools, school districts and the state Office of the Superintendent of Public Instruction. Continue to refine high risk chemicals ratings and lists that can be disseminated by the state to influence all schools across Washington.

Low-income governmental housing

The aim of this project is to reduce exposures to key hazardous chemicals found in public housing within King County.

2009 results: This project fell short of target. Developed signed agreements with two out of three public housing authorities to eliminate and properly dispose of all mercury-containing thermostats as well as implement some pesticide-reduction strategies. Provided Integrated Pest Management training and consultations.

Influencing factors: Local housing authorities are stretched thin, yet are interested in working with us on a variety of hazardous chemical reduction strategies, both in their facilities and landscapes and in getting useful information directly to their residents.

Strategy going forward: Continue work with housing authorities, looking for avenues where our services best match their needs. In addition to mercury-reduction through fluorescent lamp recycling and thermostat change-outs, we will focus on integrated pest management techniques to explore ways to reduce pesticide use.

Flood hazard zones

This project aims to prevent the release of hazardous chemicals in the event of major river flooding in King County.

2009 results: Provided significant outreach to both businesses and residents potentially affected by the diminished capacity of the Howard Hanson Dam in the lower Green River Valley. Developed best management practice guidelines for storage and use of hazardous materials in flood zones from federal and other sources.

Influencing factors: Each flood zone valley within King County has a different mix of issues, from predominantly agricultural in the Snoqualmie to commercial and industrial developments in the Green. No one size fits all in terms of best management practices or outreach mechanisms. Our emphasis is 2009 has been in the Green, while continuing to provide core assistance in the Snoqualmie.

Strategy going forward: We will continue to explore the best approaches to hazardous material storage concerns in areas subject to major river flooding and to work with those agencies, local governments and businesses who know flood-related issues the best.

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- Mistakes to fix

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PERFORMANCE MEASURES

RESIDENTS STEWARDSHIP

2013 Rating:

About this measure: The King County Environmental Behavior Index (EBI) tracks and reports on the degree selected environmental behaviors are practiced by King County residents. In 2005, 2006, 2008 and 2011, approximately 1000 randomly selected residents in King County participated in a telephone survey and reported on their household's behaviors related to:

- Yard Care
- Recycling And Disposal
- Water Quality
- Climate

Understanding residents' behavior guides a more cost-effective targeting of outreach efforts and helps evaluate whether the efforts to improve these behaviors are making a difference.

The 2011 Environmental Behavior Index was conducted in spring of 2011. The findings about recycling and disposal information can be found under the performance measure on solid and hazardous waste management.

Below are details on the findings for the yard care and purchasing areas.

Residents' Purchasing Recycling And Disposal

2011 results: This year's survey indicates that choosing less-toxic cleaning products and less-toxic paints and giving experiences instead of physical gifts have all improved in recent years.

2011 target: Improving trends in purchasing practices

2014 target: Improving trends in purchasing practices

Influencing factors: Many factors affect the purchasing decisions. Cost, product convenience, and availability are all influential. Public awareness about the impacts of these decisions on the health and environment also plays an important role.

Strategy going forward: King County is advancing efforts to improve purchasing practices in several coordinated ways. The Solid Waste Division is emphasizing public education through the Eco-consumer program and is sponsoring Eco-Deals — a partnership with makers of green products to use coupons and discounts to promote green products.

The King County is also involved nationally, regionally, and locally with product stewardship efforts that require manufacturers to establish product collection programs. The "Take it Back Network" is expanding locations and opportunities to recycle fluorescent bulbs, electronics and other products.

Residents' Yard Care Practices

2011 results: This year's survey of King County residents confirms that yard care behaviors indicates significantly improving practices regarding:

- composting
- controlling invasive plants, and
- reducing lawn size.

The yard care practices that are steady or only slightly improving include:

- lawn watering
- adding native vegetation, and

Related Information

Rural Stewardship

Forestry Stewardship

Farm Stewardship

- proper treatment of treatment of trees and shrubs for insects/diseases.

2011 target: Improving trends in residents' yard care practices

2014 target: Improving trends in residents' yard care practices

Influencing factors: Recycling yard waste and changes in pesticide use are fairly easy behaviors to change and improve—and there are many voices, messages and incentives to encouraging such change. Reducing lawns, using the right fertilizer, using compost and restoration with native plants, all involve more complex and costly changes and have fewer supporting messages or region wide programs explaining how to do it.

Strategy going forward: Water and Land Resources Division (WLRD) will continue to partner with local cities—reaching 13 neighborhoods in 2009 —using Natural Yard Care classes to help folks transition into smaller lawns, use of native plants and pervious pavements and proper fertilizing and composting. Other counties (Pierce and Snohomish) are beginning to replicate our program.

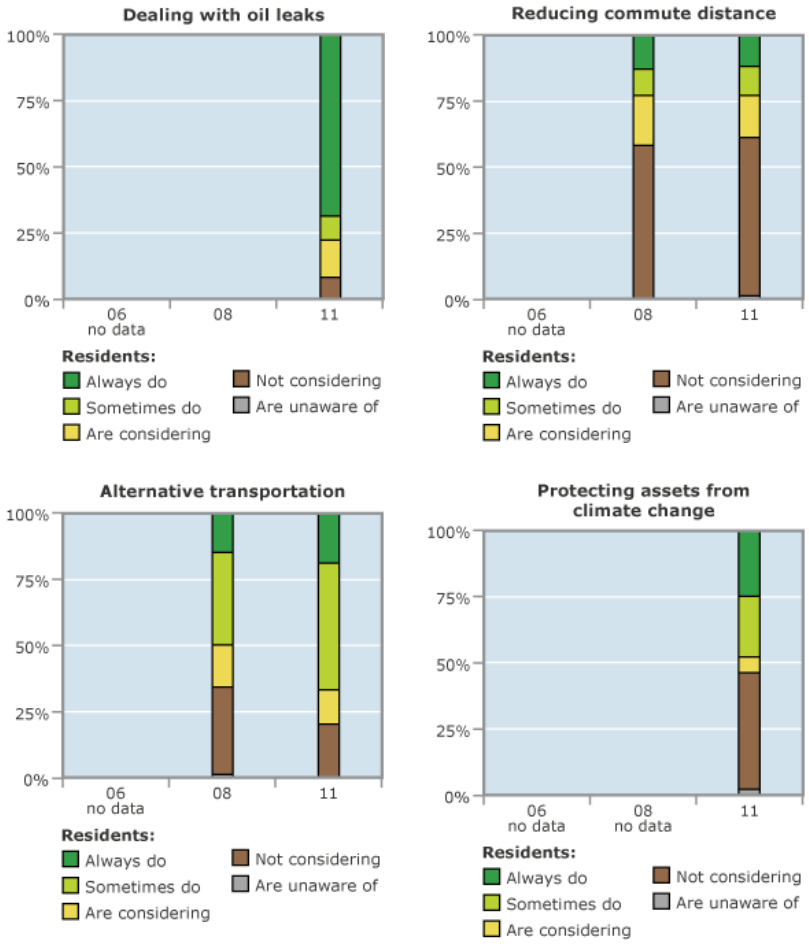
The new online, "Northwest Native Plant Landscaping Guide" is being promoted in conjunction with the trainings to provide technical assistance to residents.

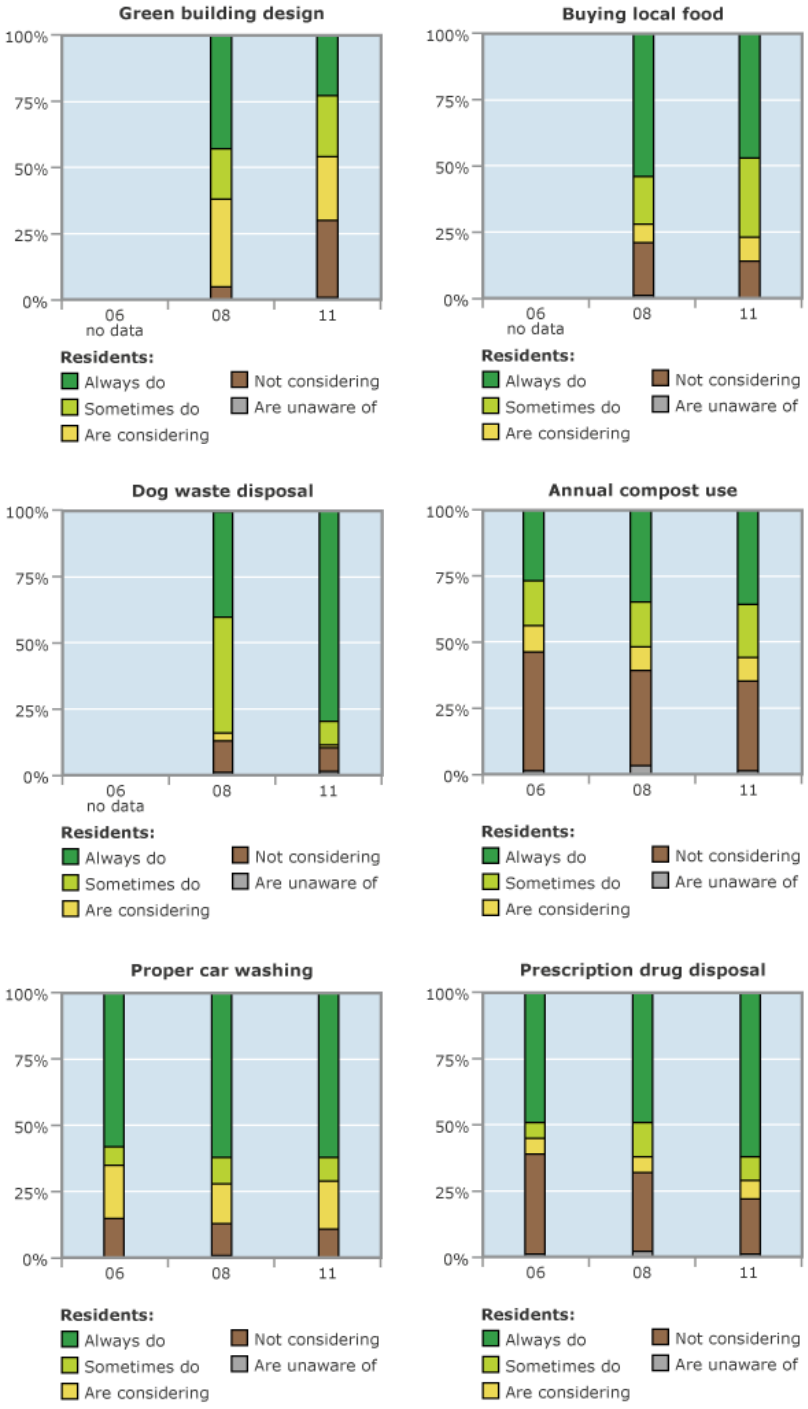
A Natural Yard Care Web site created by our Online Solutions group in 2008, should be up and running by 2009. The King County TV Yard Talk show will continue to feature information on these topics. Also in 2009, more relevant information about stormwater and best management practices (car washing, pet waste, infiltration and yard care) will be offered through the Natural Yard Care classes, Yard Talk, and via an upcoming series of broadcast ads to be aired in Sept/Oct 2009 on cable networks.

Technical Notes:
King County Environmental Survey Report 2011 - 3MB PDF

2008 Environmental Behavior Survey Report - 1.4MB PDF

Environmental Behavior Survey Findings





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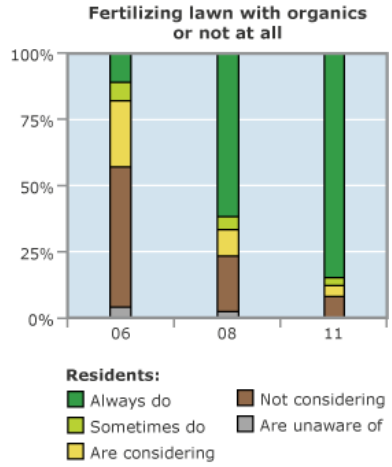
Fertilizing lawn with organics or not at all
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08
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Residents:
Always do
Not considering
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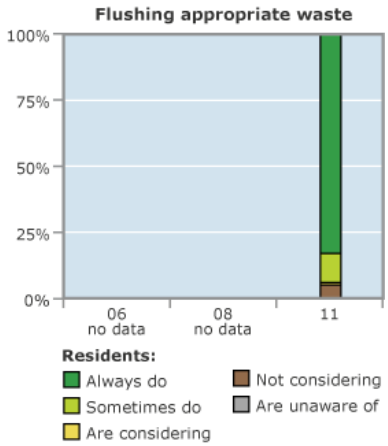
Flushing appropriate waste
100%
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Residents:
Always do
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Sometimes do
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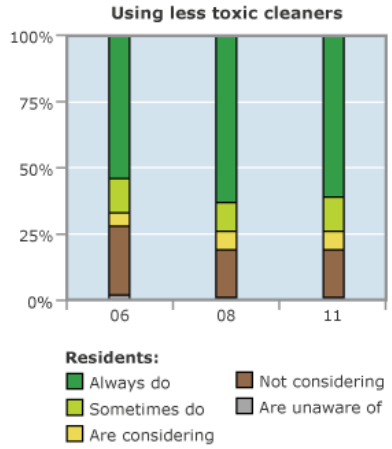
Using less toxic cleaners
100%
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Residents:
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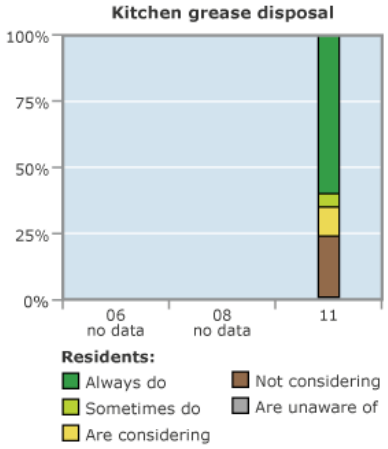
Kitchen grease disposal
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Residents:
Always do
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PERFORMANCE MEASURES

CHINOOK SALMON RECOVERY PROJECTS

2013 Rating: ↓

About this measure: In 1999, Chinook salmon were listed as threatened under the Endangered Species Act (ESA). In 2005, the Puget Sound Region, including King County and all its partners, completed a comprehensive science-based Salmon Recovery Plan. The Plan outlines the necessary actions to achieve the delisting of Chinook salmon and benefit other salmonids including coho, and (the now ESA-listed) steelhead.

This measure reflects King County's completion of Salmon Recovery Plan capital restoration projects and land acquisitions in unincorporated King County. An initial and ambitious list of 136 projects, across three watersheds (Snoqualmie, Cedar, and Green), was identified in the unincorporated portions of King County. The Recovery Plan suggests that King County should implement these projects in a ten-year period, 2006-2015. This timing would require King County on average to complete 13.6 projects per year. However, progress hinges on funding commitments from federal, state and local sources. Since the initial list was identified, adaptive management has led to the addition of new projects including actions in a fourth watershed (White River) and the removal of some actions. This measure reports King County's completion of priority salmon recovery projects compatible with the Recovery Plan goals and compares that progress to the ambitious plan goal of 13.6 projects each year.

2013 Results:

2 projects were completed in 2013

- Cedar Grove Road â€“ Rainbow Bend Levee Removal
- Cedar River Rainbow Bend Acquisition

64 projects are actively underway across three watersheds

- 11 Snoqualmie River Watershed (WRIA 7)
- 42 Cedar River-Lake Washington Watershed (WRIA 8)
- 10 Green-Duwamish Rivers Watershed (WRIA 9)
- 1 Puyallup White Watershed (WRIA 10)

Cumulative number of projects completed from 2006 - 2013: 29

Cumulative number of projects actively underway and/or completed: 93

Preliminary construction for 64 projects are actively underway across four watersheds

2013 Target: 13.6 projects per year would keep pace with the Chinook Salmon Recovery 10-year Plan.

2013 Results: 2 projects were completed in 2013.

2014 Target: 13.6 projects should be completed in order to keep pace with the Chinook Salmon Recovery 10-year Plan.

Completing 109 total projects by year end 2013 would keep pace toward accomplishing the 10-year goal by 2015. To date, 93 projects total have been completed or are currently in some phase of implementation.

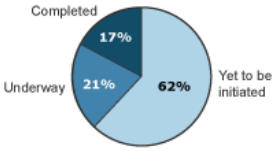
Influencing Factors: King County's ability to meet our target is primarily hampered by a lack of dedicated funding for salmon recovery capital actions. The majority of dollars to support our success to date come from external grant sources. As of 2011, 11 projects have been dropped from that list due to results of feasibility studies and 9 projects have been added.

Strategies Going Forward: King County continues to work strategically to prioritize and sequence its efforts to ensure the most important projects are implemented first. The county is actively pursuing acquisitions and capital design and construction projects across all watersheds. We work closely with our regional partners to identify leveraging opportunities and other partnerships to facilitate the implementation of on-the-ground work. We will continue to pursue a more stable funding mechanism for salmon recovery and watershed protection efforts.

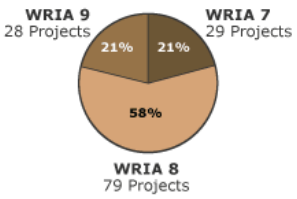
Related Information

Rural Stewardship
Forestry Stewardship
Farm Stewardship

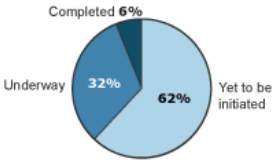
Total Number of Projects Proposed in WRIA 7



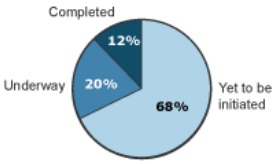
Total Number of Projects Proposed in King County Salmon Recovery Plan by Watershed



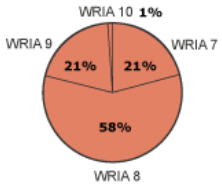
Total Number of Projects Proposed in WRIA 8



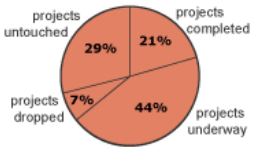
Total Number of Projects Proposed in WRIA 9



King County's 10-Year Chinook Salmon Recovery Plan Project Distribution by Watershed



Chinook Salmon Recovery 10-Year Plan Status



Technical Notes

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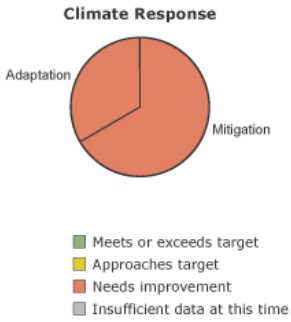
PERFORMANCE MEASURES

CLIMATE PROTECTION

2013 Rating: ↓



About this measure: This performance measure addresses the degree that King County government achieves its climate change related goals for operations related to:

- Reducing greenhouse gas emissions from government operations
- Preparing for climate change impacts

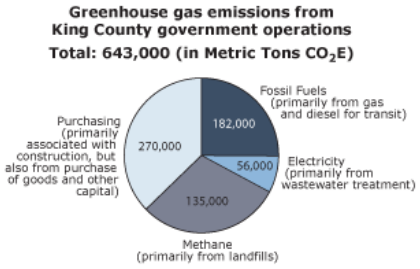
King County Executive Dow Constantine and the County Council are leaders in responding to climate change. Environmental sustainability is one of eight overarching goals of the King County government, as defined in the **King County Strategic Plan**. One of four objectives for this goal is to "reduce climate pollution and prepare for the impacts of climate change on the environment, human health and the economy."

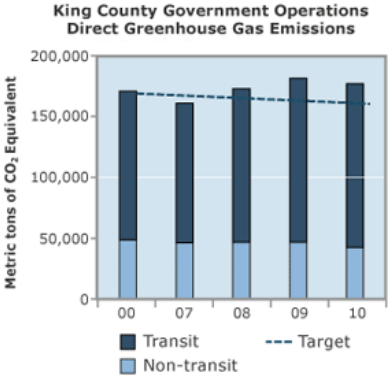
This Climate Protection Performance Measure addresses the degree that King County achieves climate change targets related to government operations. For more information about community level sources of greenhouse gas emissions as well as the status of key local climate change impacts, see the **KingStat Climate Protection Indicator**.

Reducing Greenhouse Gas Emissions

King County government operations produce significant GHG emissions — equivalent to annual emissions from about 125,000 passenger vehicles. Major government sources are combustion of diesel and gasoline fuel by transit buses and fleet vehicles, methane from landfills, electricity used in buildings and for wastewater treatment, and the production, use and disposal of government purchased goods and services associated with capital and operational practices.

King County also owns and manages approximately 20,000 acres of forest land that store large quantities of biological carbon in tree trunks, roots and foliage. Soils also store significant amounts of biological carbon.





Performance Targets: King County is committed to reducing its own environmental footprint. Updated targets for government operations are proposed in policy E-204a of the Executive Recommended 2012 King County Comprehensive Plan and in the 2012 King County Strategic Climate Action Plan, and include a goal to reduce operational sources of GHG emissions — compared to a 2007 baseline — by at least 15 percent by 2015, 25 percent by 2020, and 50 percent by 2030. These near term targets are consistent with the County's long-term goal of collaborating with other local governments and partners to reduce countywide emissions by at least 80 percent by 2050.

Status: Overall energy-related GHG emissions from government operations increased slightly (~1 percent) between 2007 and 2011. The rise in operational GHG emissions is largely due to increases in transit service. GHG emissions from bus diesel usage account for more than half of all energy-related GHG emissions, and have increased by approximately 5 percent since 2007.

WHAT CAN YOU DO?

At Home
What you can do as an individual

At Work
What businesses can do

Related Information
King County climate change response

It's Easy Being Green

Localize sustainability

Energy-related GHG emissions from sources other than transit decreased by roughly 4 percent between 2000 and 2011, a sign of progress related to implementation of the 2010 Energy Plan and the Green Building and Sustainable Development policy, among other efforts.

Influencing Factors: Example factors that influence King County's progress to reduce operational sources of greenhouse gas emissions include:

- cost and adoption rate of energy efficiency and renewable energy projects
- leadership and operational level commitments to emissions reduction
- policy development, accounting advancements, and staff training
- behavior of employees
- increasing provision of services that use fossil fuels (e.g. transit and wastewater treatment)

Preparing for Climate Change Impacts

King County plays important roles in helping minimize the local impacts and risks of climate change. For example, it has programs, policies and projects that reduce the risks of floods, develop capacity and markets for reclaimed water, partner with farm and forest owners to address climate change impacts, and plan for effects of climate change on stormwater, public health and emergency management.

Performance Targets: King County has multiple goals for preparing for the effects of climate change on the environment, human health and the economy. The overarching target is highlighted by strategy ES.3d of the King County Strategic Plan to: Identify and adapt to the impacts of climate change on natural systems, human health, public safety, county operations, infrastructure and the economy.

Status: King County is playing important roles in communitywide preparedness efforts to reduce local climate change impacts and risks. For example, the King County Flood Control District is improving floodplain management to minimize the impacts of flooding. In 2011, the district completed three flood protection infrastructure projects, helped raise the elevation of seven homes, facilitated relocation of five chronically flooded houses to higher ground, and demolished six chronically flooded houses on land that King County had purchased.

The County is helping minimize other climate change impacts and risks through actions such as developing capacity and markets for reclaimed water, partnering with farm and forest owners to address climate change impacts, planning for effects of climate change on human health, providing information to citizens on Vashon Island about the impacts of rising sea level, and ensuring that the County can continue to provide services such as transit, wastewater treatment, debris management and flood protection.

Most recently, the County has integrated the consideration of climate change impacts into a wide range of its ongoing projects and programs. These programs address issues ranging from salmon recovery to stormwater management to public health to emergency management.

Influencing Factors: Example factors that influence King County's progress to prepare for climate change impacts include:

- staff training and knowledge about likely climate change impacts
- funding availability to address potential impacts to infrastructure and natural resources
- scientific data focused on local climate change impacts

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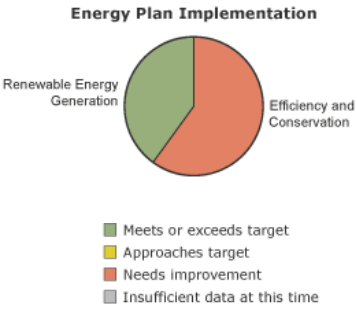
PERFORMANCE MEASURES

ENERGY PLAN

2013 Rating: ↓

Energy Plan Implementation

Progress toward Implementation of King County Energy Plan



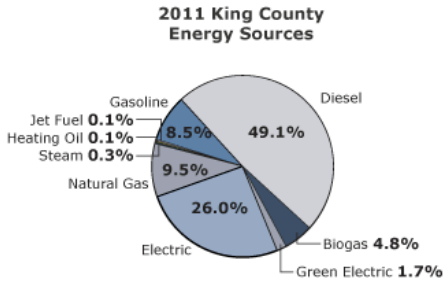
About this performance measure: In 2010, King County revised its Energy Plan. The plan established energy conservation and renewable energy goals for King County government operations, and set objectives to help meet the goals. The 2012 Strategic Climate Action Plan reinforced the energy goals of the 2010 Energy Plan, and set longer-term facility energy reduction goals for the county.

Energy Goals

- King County will reduce normalized net energy use from government operations in its buildings and facilities, as compared to a 2007 baseline, by at least 15 percent by 2015, and 20 percent by 2020.
- Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012.
- Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015

King County has mapped a comprehensive strategy for achieving the above goals through its Energy Plan, major elements of which include:

- Staffing an Energy Task Force and related subcommittees representing all major energy-using departments and divisions in the county to implement the Plan, and establishing a cross-department Energy Strategy Team to work on countywide energy issues
- Broad adoption of utility accounting software to benchmark facilities and track progress towards energy goals; reporting results to the Executive and department management
- Strategic investments in cost-effective energy projects and technologies to capture savings with both new construction and in existing buildings



Renewable Energy And Energy Capture

2013 Update

Energy Efficiency and Conservation

Measure 1: Achieve a 15 percent normalized net reduction in energy use countywide by 2015, and 20 percent by 2020 (yellow).

About this performance measure: In order to provide essential services, each year King County spends over $28 million dollars on energy to operate its buildings, and over $50 million dollars to fuel it vehicles. Energy efficiency investments and best operating practices offer opportunities to reduce the costs and environmental impact of consuming resources to provide these services. County legislation sets measurable performance goal to reduce energy use over a period of years.

Related Information

King County Energy Efficiency Ordinance

King County Climate Change site

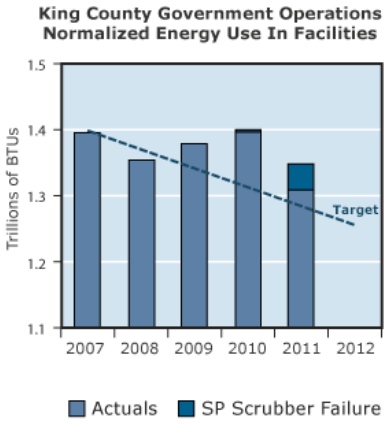
2013 results: 8.5 percent energy use reduction in County operations from 2007

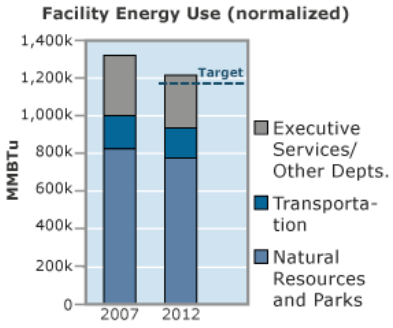
Raw energy use in 2013 is down 13.4 percent compared to the county's 2007 baseline. Normalizing facility energy use for (milder) weather reduces this reduction to a 8.5 percent reduction from the baseline year. The county made significant investments in energy efficient technologies in 2013, and will continue to make investments and undertake conservation actions to meet the 15% reduction goal by 2015 15%.

Influencing factors: Investments in efficient technologies are proving to be the key to meeting reduction goals. Leadership and operational level commitments to energy savings are driving employee engagement. Staff trainings on methods to save and track savings are building expertise.

Strategy going forward:

- Make cost-effective energy investments, supported by new financial instruments that facilitate the ability for county agencies to access funding for projects
- Educate / train staff on energy saving strategies. In 2013, Forty-five staff from across county government will attend a comprehensive Building Operator Certification (BOC) training series, which will educate them about how to identify energy efficiency opportunities in the county's buildings
- Conduct and/or update resource efficiency audits in energy intensive county facilities, and develop energy savings action plans for facilities audited
- Pursue utility grant funding and other funding

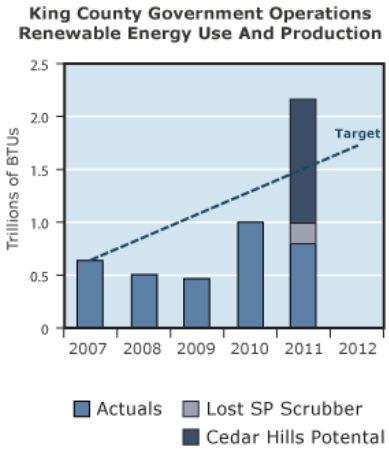




Measure 2: Produce, use or procure 50% of King County non-transit energy from renewable sources by 2012 (green)

2013 results on renewable energy

Renewable energy production continued the significant progress made in 2012 with the re-start of the Cedar Hills Regional Landfill gas processing plant, run by BioEnergy Washington (BEW). In 2013, the county produced and/or consumed the equivalent of 54.2 percent of the total facility and vehicle fuel energy needs from renewable sources. Also in 2013, the cogeneration facility at West Point Treatment Plant furthered its progress toward full operation, which it hit by year-end.

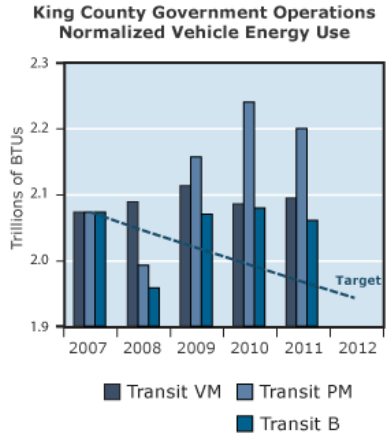


Measure 3: Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015 (red)

2013 results on vehicle energy use

Normalized vehicle energy use has increased 3.3 percent from 2007 levels. More than 80 percent of the energy used in King County vehicles occurs within Metro Transit. Metro Transit normalizes energy usage by vehicle boardings, and has seen a 1% reduction since 2007. Significant progress has been made in the county administrative vehicle fleet, which has seen an approximately 3.3% fuel reduction since 2007.

The County continues its efforts to achieve 2015 vehicle energy reduction. There are several contributing factors to Metro Transit's increased fuel consumption. Chief among these is the conversion of the fleet to larger buses to accommodate increased future ridership. Electric trolley bus replacement beginning in 2013, and continuing through 2014, is expected to bring efficiencies to that portion of the bus fleet's energy consumption.



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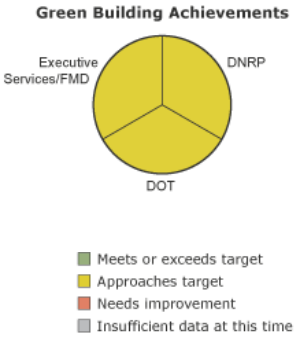
PERFORMANCE MEASURES

GREEN BUILDING ACHIEVEMENTS

2013 Rating: ⇔

Percent of King County government construction, renovation, or remodeling projects demonstrating compliance with the 2008 King County Green Building and Sustainable Development Ordinance



About This Performance Measure: This performance measure presents the percent of county capital improvement projects that are in compliance with the King County Green Building and Sustainable Development Ordinance. The King County Council adopted the original Ordinance in 2008 which calls for new county-built capital projects that are eligible to plan for and attain a Leadership in Energy and Environmental Design (LEED) Gold or other highest possible level rating. The U.S. Green Building Council (USGBC) developed the LEED rating system to provide a benchmark for the design and construction of high performance green buildings. Under the Ordinance, LEED-eligible projects shall submit a completed LEED Checklist, which documents which LEED points the project team expects to achieve. The Checklist is submitted to the King County Green Building Team when a project is at 30 percent design and again at project completion.

The Ordinance also requires that all non-LEED-eligible King County capital projects incorporate green building and sustainable development practices whenever possible. These projects must submit a Sustainable Infrastructure Scorecard to the King County Green Building Team when a project is at 30 percent design and again at project completion. Most county capital projects fall under the requirement to use the Scorecard.

A new Ordinance amending the original Green Building Ordinance was adopted by the Metropolitan King County Council and signed by the Executive on December 19, 2013. The amended Ordinance allows for alternative rating systems to be used to meet compliance, so future reporting on this measure will also include certifications made under rating systems other than LEED and the Sustainable Infrastructure Scorecard,

How is our performance?

2013 Results: 98.0%

2013 Target: 100%

2014 Target: 100%

Influencing Factors: In 2013, there were 287 out of 293 projects that submitted either a Sustainable Infrastructure Scorecard or LEED Checklist, thereby resulting in a 98.0% compliance rate. The King County Solid Waste Division (SWD) GreenTools Program staff continued to conduct trainings specifically covering the Sustainable Infrastructure Scorecard, annual green building reporting, the LEED Rating System, greenhouse gas emissions calculation and mitigation, Integrative Process, ecocharrettes, life cycle cost analysis (LCCA), energy efficiency and green operations and maintenance. These trainings were available to all King County staff at no cost.

Strategy Going Forward: In 2014, GreenTools Program staff will continue to provide trainings for King County staff and encourage King County divisions to submit Scorecards and LEED Checklists in order to reach 100% compliance. Staff will also work to improve the performance and utility of Scorecards and Checklists to maximize green building and sustainable development opportunities. In addition, SWD is working with the King County Office of Performance, Strategy and Budget (OPSB) to make improvements to OPSB's Project Information Center (PIC) database. Improvements could include activating the PIC's "Sustainability" tab which will allow GreenTools staff to access the PIC year round to track the number of projects being reported, a project's phase, and if a Scorecard or Checklist has been completed.

Technical Notes

⊞ For definitions and more detail.

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Related Information

Sustainable Building Topics

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PERFORMANCE MEASURES

PEOPLE AND COMMUNITIES

This roll-up measure summarizes the degree DNRP is achieving its **People and Communities goal**:

Protect and improve human health and safety; foster community building and healthy living; preserve and enhance historic properties; and build internal capacity for excellence, equity and fairness in service delivery.

2013 results

Areas under this goal where DNRP performed well:

- Jurisdictional Partnerships
- Customer Satisfaction
- Volunteerism

Areas under this goal where DNRP performance approaches target:

- Flood Protection
- Regional Trail Access
- Recreation via Community Partnerships

Key influencing factors

Because DNRP is only one of many entities with influence over King County's community quality, collaborating with partners is essential to the department's mission. Cooperative relationships with cities and investments in new trails allow a high percentage of residents to have proximal access to King County's 175 miles of regional trails. Jurisdictional partnerships also contribute to flood program implementation.

Customer satisfaction has improved in part because program of DNRP has increasingly been learning about customer preferences and responding with improvements to drivers of satisfaction. Volunteerism rates have improved as programs make adjustments to better accommodate the interests of our diverse base of volunteers.

More information about DNRP results on 'People and Community' objectives can be seen as these pages:

- **Flood Protection**
- **Regional Trail Access**
- **Recreation Via Partnerships**
- **Volunteerism**
- **Customer Satisfaction**
- **Jurisdictional Parterships**

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Related Information

- DNRP Budget And Organization Chart
- Natural Resource Lands
- Greenprint
- Water and Land Resources Division
- King County Parks & Recreation
- Interactive Stormwater Projects Map

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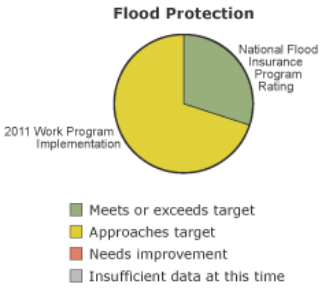
PERFORMANCE MEASURES

FLOOD PROTECTION

2013 Rating: ⇔



About this measure: This measure describes flood hazard risks reductions completed by the King County flood protection program in 2013.

2013 target: fully implement the 2013 flood protection program

2013 program results:

Flood damage repairs and levee rehabilitation projects — Flood damage repairs and levee rehabilitation projects were completed at:

- Reddington Levee (Green River)
- Dykstra Levee (Green River)
- Boeing Levee (Green River)
- Hawley Road Levee (Green River)
- Rainbow Bend Levee (Cedar River)
- Belmondo Revetment (Cedar River) - initiated during the January 2009 flood, with permanent repair segments completed in 2010, 2012 and 2013.

Acquisition and elevation of at-risk structures

Thirteen acquisitions and nine elevations of at-risk residential structures were completed along the Tolt, Raging, Upper Snoqualmie and Lower Snoqualmie Rivers. Five acquisitions along the White River and one along the Cedar River were completed, Acquisitions totaled about $10.6 million for homes on 81 acres countywide.

Agricultural flood mitigation

In the lower Snoqualmie valley, three farm house elevations are completed, one project is underway, and one is waiting for bids,

Acquisitions for levee or revetment projects

About $3.7 million was applied to acquire 19.81 acres to support the following levee setback projects:

- River Mile 1.1 on the Tolt River
- Riverbend on the Cedar River ($3 million to cost share 18.64 acre acquisition, reflected above)
- Right Bank on the White River.

Flood buyout, relocations, deconstructions and demolitions

Twenty-two homes were removed and 11 were relocated from flood-prone locations and future levee setback sites.

2014 target: fully implement the 2014 flood protection program

Influencing Factors: King County's advance in flood protection was influenced by the participation, involvement and support of cities through the Basin Technical Committees and the Advisory Committee, as well as actions by the KCFCD Board of Supervisors.

Strategy Going Forward: the Flood Hazard Management Plan has been updated to reflect new information and changes in conditions.

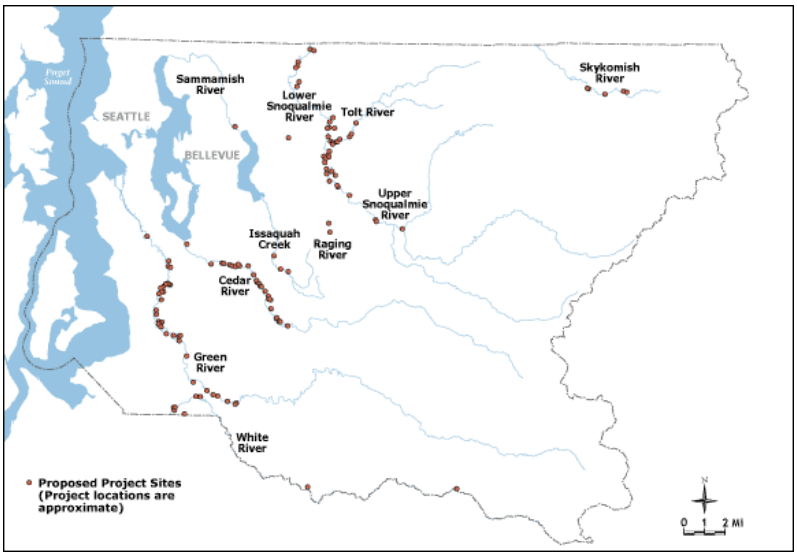
Background: During 2007 King County took several significant steps to identify and respond to the flood hazards facing our communities. First, in January 2007, the King County Council adopted the 2006 Flood Hazard Management Plan, which included an evaluation of flood hazard vulnerabilities and an action plan of capital projects and programmatic activities intended to reduce flood risks throughout the County.

Following adoption of the Plan, the Council then authorized the formation of the King County Flood Control District (KCFCD) under RCW 86.15, including the voluntary establishment of an Advisory Committee of 15 elected officials to provide the KCFCD

Related Information

- How to prepare for a flood
- Flood Buyout and Home Elevation Program
- King County Flooding Topics
- Interactive Hazard Areas Map
- Master Recycler Composter

Board of Supervisors with expert policy advice on the District's work program priorities and budget. The Advisory Committee is supported by King County staff with input and recommendations from Basin Technical Committees comprised of public works and planning officials from cities throughout the County.



Water and land resources division capital improvement project locations
2005 - 2009
Click on each river name to download a detailed PDF map.

Technical Notes

For definitions and more detail.

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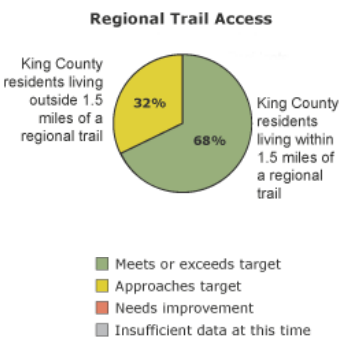
PERFORMANCE MEASURES

REGIONAL TRAIL ACCESS

2013 Rating:

Residents' proximity to regional trails & Other Important Measures



About these measures: Regional trails in King County are important public amenities providing active recreation opportunities and regional mobility. The Regional Trails System is 300 miles of paved and unpaved greenways. The King County Parks Division has developed and/or maintains the majority of these facilities. Four measures are tracked to report on progress toward further improving the King County Regional Trail System:

1. Access and proximity to population
2. Closing existing gaps in the network
3. Redevelopment/upgrading of older existing trails, and
4. Ensuring safe trails and bridges.

Access and proximity to population

2013 Target 70% of county residents living within 1.5 miles of the Regional Trail System

2013 Result 69%

2014 Target 70%

Closing existing gaps in the network

2013 Target
Construction was expected to begin on Segment B of the Lake to Sound Trail in 2013, while design and permitting continues on Segment A. Phases 5 and 6 of the Soos Creek Trail would complete 60 percent design.

2013 Result
In 2013, the Division continued design phases for Lake to Sound Trail segments A and B. Construction of Segment B is dependent on the execution of interlocal agreements with the cities of SeaTac and Burien as well as utility agreements with Puget Sound Energy and Seattle City Light. The Division focused on developing the complex agreements and anticipates King County Council approval in 2014.

Phases 5 and 6 of the Soos Creek Trail completed 60 percent design. The Division focused on acquisition of a key parcel on the Soos Creek Trail corridor in order for the trail to be located outside of sensitive areas and reduce cost of future development.

In addition, the Division undertook discussions and feasibility analyses to fill the two-mile Mill Gap on the Snoqualmie Valley Trail, one-mile gap on the Foothills Trail, and construct the White River Bridge in southeast King County. These projects will all fill important gaps in the regional trails network.

King County acquired the remaining segmetns the Port of Seattle owned of the Eastside Rail Corridor (ERC), sparking planning efforts for to define the planned trail area and other important features. The ERC Regional Advisory Council convened and initiated multi-use high-level planning. The Division identified the ERC trail technical planning work program for a two-stage master planning process and selected a consultant team to begin work in 2014.

2014 Target
Construction of Segment B of the Lake to Sound Trail will begin in summer 2014. Lake to Sound Segment A will reach the final design stage and permits will be secured by the end of 2014.

The first technical master planning phase for the Eastside Rail Corridor Trail will be underway in 2014 (Phase 1a). The effort will analyze trail corridor opportunities and constraints along with anticipated interconnections to existing and future planned regional trails.

Related Information

- Regional Trail Access equity information
- King County Regional Trails
- King County Bike Map
- Walking Maps in King County
- Interactive Stormwater Projects Map

Redevelopment and upgrading of older existing trails

2013 Target
The construction of phase 2 of the Master Planned East Lake Sammamish Trail through Issaquah will be completed in spring 2013. The North Sammamish segment of the trail will begin construction in mid-2013. Design of the South Sammamish Segment will be initiated as funding becomes available.

2013 Result
The construction of phase 2 of the Master Planned East Lake Sammamish Trail through Issaquah to replace the existing "interim" gravel trail was completed in spring 2013. Design and permitting was completed on the 2.6-mile North Sammamish segment of the trail. Construction is now anticipated to begin in spring 2014. Design activities were also initiated on the first of two South Sammamish segments of the East Lake Sammamish Trail.

2014 Target
The construction of the North Sammamish segment of the Master Planned East Lake Sammamish Trail will begin in the spring, with anticipated completion by mid-2015. This project will pave and substantially improve the trail corridor, making the trail more accessible and useable by bicyclists and others. Design of the first of two South Sammamish segments will reach 60 percent.

Ensuring safe trails and bridges

2013 Target
Additional bridge improvement projects and trail spot surface improvements will continue to be undertaken, where needed, to enhance trail reliability and user safety.

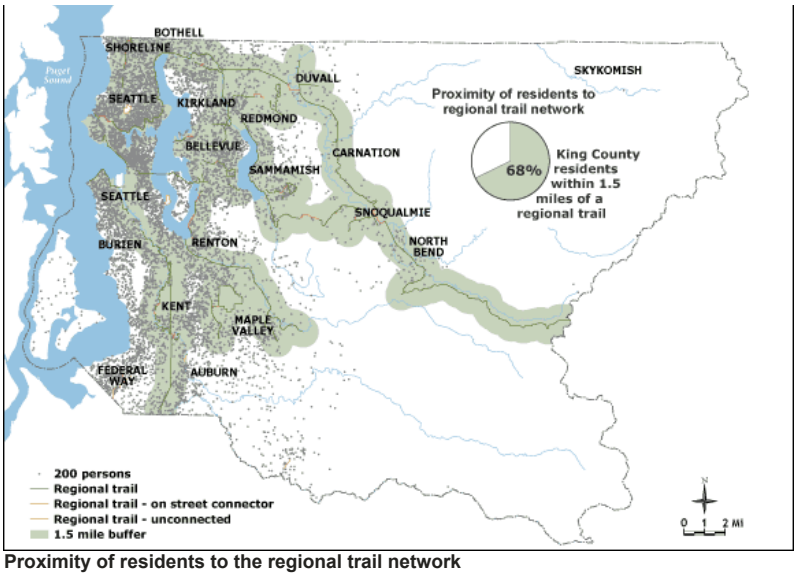
2013 Result
The Division's Bridge and Trestle Program completed new crossing safety improvements on the Burke-Gilman Trail in east Kenmore, spot safety improvements along the Sammamish River Trail, and major maintenance improvements to the Griffin Creek Bridge.

2014 Target
The 2014 Adopted Budget increases funding for the Bridge and Trestle Program with the approval of the 2014-2019 Parks, Trails, and Open Space Replacement Levy. The work program begins the major rehabilitation of the Tokul Bridge on the Snoqualmie Valley Trail. Additional bridge improvement projects and trail spot surface improvements will continue to be undertaken, where needed, to enhance trail reliability and user safety.

Influencing factors: Regional trail facilities are similar to roadways - lengthy paved or compacted gravel thoroughfares running in linear open space corridors. Like roads, their development process includes planning, design, permitting, and construction. This process can take years and since many trails are located within or near sensitive habitats where development requires more unique structures, additional permit,s and extensive environmental mitigation, as necessary.

Often, the missing links in the system require expensive elements such as bridges over roads or waterways, or navigation around sensitive areas such as wetlands. Additionally, in urban areas, existing build-out presents substantial challenges to creating new trail corridors do to the lack of readily available land.

Strategy going forward: The Division continues to improve the regional trail system by addressing system distribution, gaps, redevelopment, and bridge resiliency. Redevelopment and upgrading trail segments enhances the network by adding capacity and improving safety. The recently approved 2014-2019 Parks, Open Space, and Trails Replacement Levy provides funding for a regional trails six-year capital improvement program which will progress the County towards objectives laid out in the King County Strategic Plan.



Proximity of residents to the regional trail network
2006 Findings
Click to download the PDF version.

Technical Notes

For definitions and more detail.

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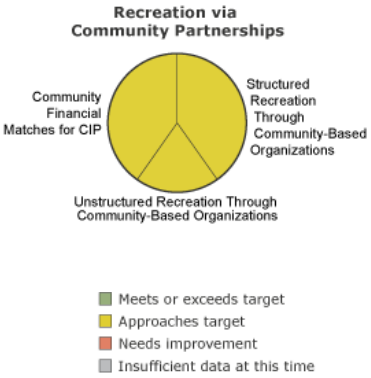
PERFORMANCE MEASURES

RECREATION SERVICES PROVIDED THROUGH COMMUNITY PARTNERSHIPS

2013 Rating: ⇔

About this measure: This measure considers the success of King County Parks Division's efforts to expand public recreation opportunities using community-based partnerships. The Community Partnerships and Grants (CPG) Program is the primary tool that Parks uses to develop community-based partnerships. This measure includes the number of public users benefiting from new community-based public recreation development projects and the amount of additional community investment leveraged for construction, operations, and programming.



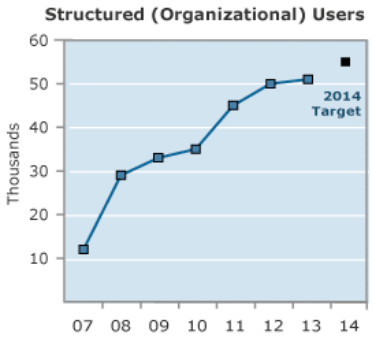
Structured Recreational Users: Number of users benefiting from new or improved structured recreational opportunities (through leagues and other organizations) provided by community-based partners:

2013 Target: 52,000

2013 Actual: 51,000

2014 Target: 55,000

In 2013, King County Parks unveiled a new synthetic field at Big Finn Hill Park, in partnership with Kirkland Larcrosse. Along with 200 new lacrosse users, the field will be used by approximately 800 soccer players from Lake Washington Youth Soccer, Northshore Youth Soccer, and Greater Seattle Youth Soccer. The Division anticipated picking up the shortage with an additional 1,000 new users as awareness of the new field increases and scheduling efficiencies are implemented in 2014.



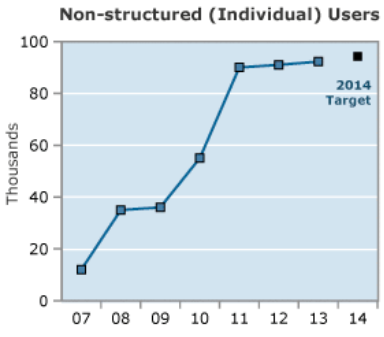
Additionally in 2014, two major new synthetic field facilities will be opening â€“ Ravensdale Phase 2 and Redmond Ridge. These facilities will provide opportunities for 6,000 structured users from youth baseball, youth soccer, youth lacrosse, and youth football, as well as, adult sports. Following the projected ramp-up of field usage at Big Finn Hill Park, half of the projected 6,000 structured users are included in the 2014 target.

Non-Structured Recreational Users: Number of users benefiting from new or improved non-structured (individual) recreational opportunities provided by community-based partners:

2013 Target: 97,250

2013 Actual: 92,250

2014 Target: 94,250



In 2013, partnership projects completed at Maury Island Marine Park and Island Center Forest support over 2,000 non-structured users.

The forty-acre Tanner Landing Whitewater Takeout Park was anticipated to be completed in 2013; however project completion is now expected in 2015. New opportunities to partner with the City of North Bend on the project requires additional planning time that will result in a more strategic design that includes adjacent City property. Once the project is completed, it is projected to serve 5,000 non-structured users including kayakers, rafters, fisherman, and campers.

Community Partnerships and Grants (CPG) Partner Financial Match: Annual financial match leveraged through community-based partners:

2013 Target: $3.4 million

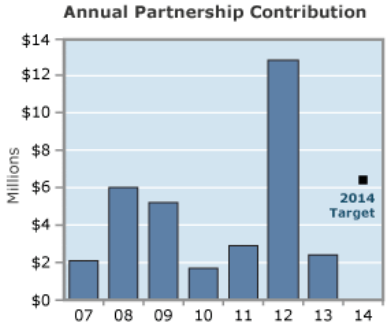
Related Information

Community Partnerships and Grants

Propose a community project

2013 Actual: $2.4 million

2014 Target: $6.5 million



Financial contributions in 2013 include a $1.8 million community investment at Big Finn Hill, as well as ongoing investments made by Sammamish Rowing Association at the Marymoor Boathouse.

A synthetic field conversion project began in late 2013 at Redmond Ridge Park, and will be completed in Spring 2014. The $1 million financial match from Redmond North Little League included in the 2013 Target carries forward to the 2014 Target.

Additional contributions projected in 2014 include: $4 million from the Ravensdale Park Foundation and City of Maple Valley for field improvements at Ravensdale Park; $1.1 million from the Eastside Football Club for phase 3 at Preston Community Park and Athletic Fields; and $1.5 million from Northshore Little League at Northshore Athletic Fields.

Influencing factors: Community-based partnerships succeed if the organization is well organized, has good leadership, and a strong commitment to the project/facility/site. The availability of resources from a group, availability of land for recreation development, and partnerships with neighboring jurisdictions or permitting agencies can influence the timing of project completion.

Strategy going forward: The Division will continue to make strategic investments via the CPG Program. The recently approved 2014-2019 Parks, Trails, and Open Space Replacement Levy continues funding for the CPG program, as well as providing additional staffing to work with partners and the community to develop, plan, design and implement these projects.

Technical Notes

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PERFORMANCE MEASURES

VOLUNTEERISM

Parks Division

Volunteer hours

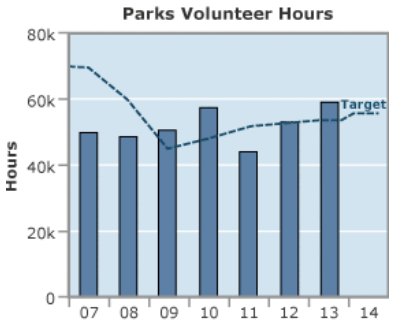
2013 Rating:

About this measure: King County Parks engages the community, educates park visitors, and provides basic enhancements to the park system and the environment through the volunteer program. Volunteers donate their time and labor to help improve and maintain community green spaces, recreational areas and natural resources that make up King County Parks. In addition to the added resources volunteers bring to park projects, people leave with a greater knowledge and appreciation for the King County park system, including trails and natural lands.

2013 target: 54,000 volunteer hours

2013 results: 59,200 volunteer hours

2014 target: 56,000 volunteer hours



Influencing factors: In 2013, 8,400 volunteers provided 59,200 hours. The volunteers represented over 60 different groups and numerous individuals, in more than 330 volunteer events in over 50 park sites, natural areas, and trail sites. In addition, there was a concerted effort to identify and account for other groups actively volunteering in King County Parks that were not previously tracked.

Competition for corporate volunteer events remains high among public agencies and non-profits, as budgets get smaller or disappear all together. However, the increase in volunteer hours is a sign that companies still identify with King County Parks and are satisfied with the volunteer event opportunities we provide. Notable 2013 program accomplishments include the following:

- Parks' backcountry trails continue to be improved by volunteers. During more than 150 events, volunteers built 14,100 feet of new trail and completed 21,210 feet of trail maintenance. Volunteers worked on 6.7 miles of backcountry trails at 15 park sites. Volunteers planted 22,200 native trees and shrubs at 16 King County sites. Volunteers helped with reforesting efforts at Taylor Mountain Forest and McGarvey Park by planting over 7,000 conifer trees. Major restoration projects occurred at Soos Creek Trail, Cedar Grove Natural Area, and Taylor Mountain Forest In-holders site with over 7,000 native trees and shrubs being planted. These plants help to restore wetlands and streams, forested floodplains and wildlife habitat and add vital diversity to our forests. They also help to enhance natural areas within our active parks, making them more aesthetically pleasing, while increasing natural wildlife habitat and water quality within these communities.
- Volunteers also exerted tremendous effort removing 570 cubic yards of noxious and invasive weeds during 76 events. These weeds included blackberries, Scot's Broom, English Ivy, tansy ragwort, knotweed, loosestrife, butterfly bush, thistles, reed canary grass and poison hemlock.
- This is the fourth year that Parks has been awarded an AmeriCorps National Civilian Community Corps (NCCC) team. This year, we had one team with 9 members who were very industrious: they planted 10,115 trees, planted 2,000 willow stakes, along with other tasks totaling 1,728 hours of outstanding volunteer service.
- The Park and Trail Ambassador program remains a dedicated group of caring citizens committed to helping Parks. This year there 50 active Ambassadors in 27 different park areas who gave over 4,100 hours of service. Many Ambassadors have and continue to be in close contact with field staff to alert them to imminent safety issues and pertinent trail or park conditions. Ambassadors are also active in assisting staff with mapping of trails, land use decisions and providing input on acquisitions.

Strategy going forward: A new position will be hired in 2014, thereby increasing staff capacity for volunteer planning and management. Parks budget constraints place particular importance on the efforts and success of the Volunteer Program, as it keeps the cost of parks maintenance down. The substantial effort made in 2013 to update recruitment, event registration, and

Related Information

King County Volunteer

The Dirt: DNRP Calendar of Events

Volunteer at King County Parks

Salmon Watchers Program

Salmon Watcher Program, Training Slideshow

record keeping procedures was a success, and the effort will continue in 2014. Due to the large increase in volunteer hours in 2013, the Division is cautiously optimistic that it can raise its target for 2014.

With the implementation in 2014 of the volunteer program Constituent Relationship Management (CRM) database, we anticipate data collection will improve allowing for more-detailed and efficient data tracking. This will allow for desired analysis of trends in the types of groups involved, and projects and locations preferred. This will also help to examine relationships with individuals and groups in order to encourage volunteers to return. It will also help in strategizing for recruiting new volunteers.

Solid Waste Division (SWD)

Number of Public Contacts Made by Volunteers Trained by the Master Composter Recycler (MRC) Program Annually

About This Performance Measure: This measure presents the number of public contacts made each year by paid outreach staff and volunteers trained by the Master Recycler Composter (MRC) program. The volunteers and paid staff receive training about waste reduction, recycling, and solid waste impacts on climate change, with a primary focus on King County's "**Recycle More. It's Easy to Do.**" campaign. In return, the MRCs agree to volunteer time along with paid staff to provide program outreach about curbside and food scrap recycling. Volunteers and staff run information booths and distribute samples of compostable food scrap bags at community events (such as Issaquah Salmon Days) and at farmers markets. In addition, presentations on the "**Recycle More. It's Easy to Do.**" campaign are offered to community groups

2013 Results: 14,088 public contacts

2013 Target: 25,000 public contacts

2014 Target: 15,000 public contacts

Influencing Factors: The number of public contacts made depends on the number of volunteers and paid staff available to provide outreach and on the size and number of events staffed. The MRC program targets events that typically draw the largest number of attendees and prioritizes events that are held in areas of the county that have the lowest recycling rates (primarily south King County). With only three new MRC volunteers trained in 2013 and only four previous volunteers returning, paid staff were needed to cover a majority of events. A resulting increase in staff costs meant that fewer events were staffed and fewer contacts made than were anticipated at the time the 2013 target was established.

Strategy Going Forward: The 2014 target is based on the number of contacts made in 2013. It is anticipated that the same events will be staffed in 2014, resulting in a comparable number of public contacts. Events staffed in 2014 will continue to include large-scale community events such as Auburn Good Ol' Days and Maple Valley Days. MRC volunteers and staff will also continue to offer PowerPoint presentations to community groups to provide information about the "Recycle More. It's Easy to Do." campaign. SWD will continue to focus its outreach primarily in areas of the county with the lowest recycling rates (mostly in south King County), but will also offer outreach to other areas as the budget allows. Given the low number of volunteers trained in 2013, SWD will enhance its recruiting efforts for 2014 and will be reassessing the effectiveness of the program if the number of volunteers in 2014 is also low.

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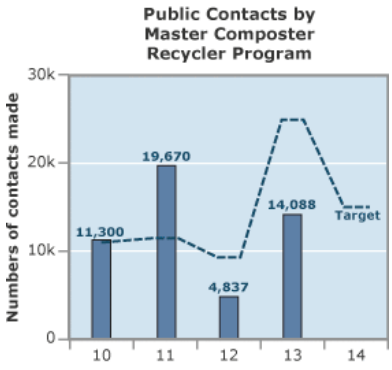

Water and Land Resources Division (WLRD)

Salmon watcher program

Salmon Watcher is a multi-jurisdictional effort focused at protecting a Pacific Northwest treasure and educating the community in the process. The Salmon Watcher Program is a volunteer effort that originated in 1996. It involves volunteers watching streams for spawning salmon in King and Snohomish Counties. This effort mainly focuses on waters within Water Resource Inventory Area 8 (WRIA8) which includes the Lake Washington Watershed and some streams leading to Puget Sound.

Regional agencies who participated in the Salmon Watcher Program along with King County during the 2013 season include the Bellevue Stream Team, the cities of Bothell, Kirkland, Issaquah, Redmond, Renton, Seattle, and Woodinville.

Volunteers were trained and conducted surveys between August 2013 and January 2014. Volunteers counted all live and dead adult salmonids they observed. Over 2,400 streamside site visits were made.

2013 target:
Over 100 sites on at least 35 stream reaches to be monitored

2013 results:
In 2013, approximately 122 people attended a training session, and of those, 72 were new to the Salmon Watcher Program. From data that was turned in, a total of 105 sites on 41 streams were surveyed by 96 volunteer "units" â€“ 118 total people. These volunteers spent over 650 hours streamside and reported talking with 512 citizens at their stream sites.

2014 target:
Over 100 sites on at least 35 stream reaches to be monitored

Influencing factors: The Salmon Watcher program is voluntary and new watchers enter the program upon their interest and request. Budget allocations and proactive recruitment of watchers can influence how many and the location of monitoring locations. For the 2013 season, training participants were encouraged to attend a training to learn about salmon conservation issues even if they did not turn in data. Furthermore, online data entry was mandatory for the first time, and many volunteers who watched at a stream site failed to turn in their data electronically.

Visit the website for Salmon Watcher annual reports.

Strategy Going Forward: Continuing to educate property owners with salmon streams on their property and the public about salmon and salmon habitats.

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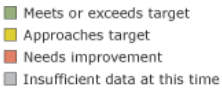
PERFORMANCE MEASURES

CUSTOMER SATISFACTION

2013 Rating:

About this measure: Customer service is a cornerstone of good performance. DNRP uses customer feedback mechanisms to:

- Understand changes in customer preferences, priorities and price sensitivities
- Assess program strengths and weaknesses and perceptions of service levels
- Guide program adjustments based on finding



Many of our larger programs have had customer feedback mechanisms in place for several years. The customer survey findings are used to steer program adjustments and ensure that changes produce the intended results.

For the most part, DNRP divisions have selected specific groups of customers or neighboring business and residents to survey about services and programs. Some of our customer service questionnaires are self-administered and others involve the use of consumer research firms.

Solid Waste Division (SWD)

Transfer station customers

2013 Results: There was no survey in 2013

2013 Target: Not applicable

2014 Target: 4.50

Influencing Factors: Not applicable, no survey in 2013

Strategy Going Forward: The last transfer station customer survey was conducted in 2008. Due to budgetary and operational issues, the next survey will be conducted in 2014.

Technical Notes: Customers respond using a 1-5 scale where 5 is excellent.

Household hazardous waste facility customers

About this Performance Measure: The Local Hazardous Waste Management Program in King County (LHWMP) operates household hazardous waste (HHW) facilities at three sites, located in North Seattle, South Seattle and Bellevue. The LHWMP also conducts Wastemobile collection events in cities around the county. In 2012, the Wastemobile had 15,203 customers and collected 541 tons of hazardous waste. Customers at the hazardous collection sites are periodically surveyed to measure customer satisfaction with the service and to gather demographic information.

2012 Results: 2.80

2012 Target: 2.70

2013 Target: N/A - as no survey is planned for 2013.

Influencing Factors: Satisfaction with days and hours of operation also appeared to have increased at the roving Wastemobile sites, and the share of respondents rating the wait time as Excellent appeared to have increased at the Factoria facility. Responses to the questions on residence type and ownership and on respondent demographics did not appear to have substantially changed between the two study years.

Strategy Going Forward: In 2012, The Solid Waste Division, as part of the LHWMP, explored several options for increasing hazardous waste disposal service to South King County residents. An on-site customer service survey was conducted in 2012 at the fixed HHW facilities and at selected roving and Auburn SuperMall Wastemobile events. This survey used to be conducted every other year; however, the results were not changing much between years so the length of time between surveys was

Related Information
About DNRP
About SWD
About WLR
Parks Feedback

extended. At this time it is unknown when the next surveys will be conducted.

Technical Notes: Surveys are ranked on a 1-3 scale where 3 is excellent. There were three areas measured for customer satisfaction: hours, days of operation and wait time. The result is the average of the total number of responses in each category. In 2012, the HHW facility at Factoria had 13,083 customers and collected 360 tons of hazardous waste. Two other fixed facilities are run by the city of Seattle.

Solid waste education programs

About this Performance Measure: In the 2012-2013 school year, the King County Solid Waste Division (SWD) reached 23,903 elementary students through an assembly program and over 19,639 elementary and secondary students through classroom workshops. Teachers find the program and workshops to be highly effective in educating students about how reducing waste and recycling benefit the environment. Teachers are surveyed on whether they think the assembly program and elementary and secondary school workshops enhance student understanding of resource conservation.

2012 - 2013 Results: 4.54 (on 1-5 scale, where 5 is highest)

2012 - 2013 Target: 4.60 (on 1-5 scale, where 5 is highest)

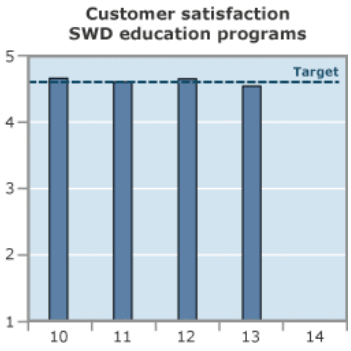
2013 - 2014 Target: 4.60 (on 1-5 scale, where 5 is highest)

Influencing Factors: The overall rating decreased from 4.65 in 2011-2012 to 4.54 in 2012-2013. The rating combines the results of three program elements: the assembly show, the elementary workshops, and the secondary workshops. The survey measures the effectiveness in enhancing student understanding of resource conservation for each element. Also measured is the extent to which both elementary and secondary teachers regard the appropriateness of the workshop to grade level.

The results of the latter may provide some insight into the overall lower satisfaction number compared to the previous year. Teachers are asked to rate on a five-point scale the appropriateness of the workshop to grade level. For 2012-2013, the ratings from elementary school teachers were consistent with the previous year, however, ratings from the secondary teachers dropped. For 2012-2013, 77 percent of secondary teachers strongly agreed and 23 percent agreed that the workshop they received was appropriate for their students. No teachers were neutral or disagreed. In 2011-2012, 89 percent strongly agreed, 11 percent agreed, and no teachers were neutral or disagreed.

Strategy Going Forward: To address the drop in ratings, the program will try to ensure that the classroom presenters adjust the workshop based on the level of student knowledge and understanding in each classroom.

Technical Notes: Surveys are ranked on a 1-5 scale where 5 is excellent. Results are reported for the school year, not the calendar year. For example, the results reported for 2013 are the results for the 2012-2013 school year.



Water and Land Resources Division (WLRD)

WLRD Customer Satisfaction

2013 target: complete some form of customer satisfaction survey for major products.

2013 Results: WLRD conducted surveys in the following product lines:

- **Local Hazardous Waste Management** Program developed an event/survey tool to record community surveys and presents the data visually using Google Maps. LHWMP partner SPU drafted Research Toolkit for Program Evaluation and Needs Assessments Summary of Best Practices to be used for projects.
- **The Science and Technical Support section** together with the Environmental Lab, met with selected internal customer groups to obtain service feedback information. The Science Section also documented the results of it 2012 electronic survey which helped identify a need for website improvements and to make regional awareness of the Section's services more prevalent. The Section has begun initiatives to address these needs.
- **Noxious Weeds:** No customer satisfaction survey for 2013; the next survey will be conducted during 2014;
- **Storm Water:** For 2013 Storm Water Customer Satisfaction returned survey results show that only one out of 30 respondents was dissatisfied with our service response. Survey respondents also answered negatively to the question: "During our investigation, did we meet out agreement/commitments?"
- **WRIA Survey:** the 2013 surveys have been distributed to all three WRIAs. Result for 2013 should be available during the Second Quarter of 2014. Results from 2012 are on file with Rural and Regional Resources section of WLRD.
- **Forestry:** WSU Extension has completed outcome and impact assessments for King and Snohomish forest stewardship classes.
- **Rivers and Floodplain Management:** distributed 6,000 surveys - No responses were received.

2014 target: improving trends in customer satisfaction rating from customers

Strategy going forward: Continue to focus on customer satisfaction and increase standardization in customer satisfaction methods. In partnership with the Equity and Social Justice program, strengthen approaches that help identify customer preferences, especially for harder-to-reach customer types.

Wastewater Treatment Division (WTD)

Wastewater Treatment Plant Neighbors

About this measure: This is a measure of the percent of business and residential neighbors who consider wastewater treatment plants in their area to be a good neighbor. The survey results below represent data from the most recent survey conducted in 2013. This survey will completed next in the fourth quarter of 2015. The results from the future survey will be reported at that time.

2013 results: 75.7% consider WTD plants to be good neighbors

2013 target: ≥ 75%

2014 target: ≥ 75%

Influencing factors: Overall, both wastewater treatment plants, West Point and South Plant, have good relationships with their neighbors. The most common reasons residents and businesses say that King County has been a good neighbor continues to be the lack of noticeable impacts of the treatment plants, considering factors such as visibility of the facilities, odor, truck trips, landscaping, environmental impact and responsiveness to community concerns.

"Bad smell" remains the most common negative impact that residents experience. Strategies going forward: The top two priorities continue to be exploring new methods of odor control and responding to complaints within 24 hours.

WTD Customer Service Satisfaction by Local Sewer Agencies

About this measure: This measure tracks the degree of local sewer agency satisfaction with the customer service they receive from WTD staff, as rated in the annual Customer Feedback Survey. The survey results below represent data from the most recent survey conducted in 2013. This survey will be completed in the fourth quarter of 2015. The results from the latest survey are still being tabulated at this time.

2012 results: 4.16

2013 target: ≥ 4.0 on a 1-5 scale

2014 target: ≥ 4.0 on a 1-5 scale

Influencing factors: The overall rating of customer service satisfaction surpassed the target for the second time in 2013, which

demonstrates the effectiveness of the overall strategy to continuously identify and address issues, maintain regular meeting schedules to ensure direct communication with customers and applying a customer centric viewpoint.

The highest rated factors making up the total customer satisfaction score were professionalism and courteousness of WTD staff, technical knowledge of staff, and staffs' knowledge of administrative procedures and requirements.

Strategies going forward: WTD will evaluate the complete results from the 2013 customer feedback survey, and evaluate any areas where needs for improvement are indicated. Through follow up with the customer agencies, WTD will identify actions to be implemented to make improvements and further increase customer satisfaction with WTD overall.

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PERFORMANCE MEASURES

JURISDICTIONAL PARTERSHIPS

2013 Rating:

Water and Land Resources Division (WLRD)

Number of Signers/Partners to Salmon Recovery Inter-local Agreements

About this measure: This measure tracks the number of member governments (including jurisdictions, tribes and King County) that have signed inter-local agreements (ILAs) for salmon recovery plan implementation. Partners that sign inter-local agreements for salmon recovery are organized around state-defined geographical areas called Watershed Resource Inventory Areas (WRIAs). ILA partners work together to implement salmon recovery in their river basins. They also cost-share on WRIA coordination services provided through King County. Some governments, including King County, span more than one WRIA and are thus party to more than one inter-local agreement. In such instances they are counted multiple times to reflect the number of agreements they participate in and pay into.

Status: There are 50 ILA partners within King County's three participating WRIAs (WRIA8, WRIA9 and WRIA7/Snoqualmie Watershed). All 50 potential partners have signed inter-local agreements.

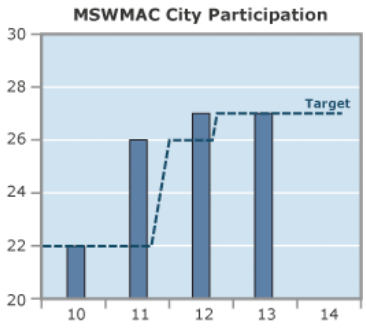
Target: We are currently at full participation. Our target going forward is to retain all 50 partners.

Influencing factors: King County's reputation as a service provider and partner in delivering services is crucial toward the success of this measure. Other jurisdictions and Indian Tribes are less likely to sign agreements to work with the county and cost share on salmon recovery coordination services if the county cannot deliver the services it has agreed to. Additionally, it is critical to have the continued regional political focus on the importance of salmon recovery and watershed protection in the Puget Sound region.

Strategy going forward: King County will continue to demonstrate quality service and success in delivering the cost-shared inter-local work. Future strategies include continued coordination with regional Puget Sound Partnership actions, advocating regional implementation of salmon recovery plans, and facilitating the development of funding sources for watershed protection and restoration activities.

Solid Waste Division (SWD)

Number of cities that are members of the Metropolitan Solid Waste Management Advisory Committee (MSWMAC)



About this measure: This committee advises the King County Department of Natural Resources and Parks (DNRP) Solid Waste Division (SWD) on key regional issues.

2013 Results: 27 cities are members

2013 Target: 27 cities are members

2014 Target: 27 cities are members

Influencing Factors: Thirty-two cities have signed the Amended and Extended Interlocal Agreement (ILA). In addition to extending the ILAs for 12 years beyond their current expiration date of 2028, the ILA memorializes MSWAC and makes it a contractual obligation. Along with the five cities that will remain in the system under ILAs that are in effect until mid-2028, thirty-seven cities continue to be part of King County's solid waste system.

Strategy Going Forward: Continuing the collaborative working relationship of the last nine years, the cities on the Metropolitan Solid Waste Management Advisory Committee (MSWMAC) and the division will be working together in 2014 on the development of financial policies to guide the solid waste system's operations and investments.

Technical Notes

Related Information

- Salmon Recovery
- IRAC - Interagency Resource for Achieving Cooperation
- Join IRAC
- Puget Sound Fresh
- Groundwater Protection
- Become a Parks Partner
- Northwest Natural Yard Days
- Groundwater home page
- The Groundwater Story
- Map of Groundwater Management Areas
- Information about King County's Groundwater Management Areas
- WRIA information

For definitions and more detail.

Wastewater Treatment Division (WTD)

Local Jurisdiction Partnerships

Quality of Contract Services Rated by Local Agencies

About this measure: This measure tracks local sewer agency satisfaction with the quality of their contract services with WTD, as rated in the annual Customer Feedback Survey.

2011 results: 3.87

2011 target: ≥ 4.0 on a 1-5 scale

2012 target: ≥ 4.0 on a 1-5 scale

Influencing factors: Ratings for this measure have fluctuated from year to year since 2001; however, in the last four years the trend is upwards moving from a red rating of 3.31 in 2008 to the current yellow rating of 3.87.

In any particular year there may be specific factors or activities underway by the division that influence the local agencies' satisfaction with the contract services they receive from WTD. In 2006 a low score of 3.29 was received, which was likely attributed to the negotiations of contract extensions that were underway at the time with the local agencies. In 2007 the score rose to 3.62, which may have reflected the positive outreach efforts taken by the new Division Director, who visited individually with each of the local agencies to discuss their concerns and hear their ideas. In 2008 the low rating of 3.31 may be attributable to somewhat controversial program initiatives and projects that are underway, such as construction of the Brightwater Treatment Plant, and the development of a Reclaimed Water Comprehensive Plan.

Strategies going forward: While ratings of satisfaction with wastewater contract services fluctuates from year to year, WTD continues to maintain open dialog on all major projects and initiatives with the contract customer agencies via the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) and its technical and financial subcommittees, which regularly meet with WTD staff and management to provide input to WTD operations, finances and capital programs and projects. WTD continually works to improve relationships, enhance trust and open communication with its customer agencies.

Local Agency Satisfaction with the MWPAAC (Metropolitan Water Pollution Abatement Advisory Committee) Process

About this measure: This measure provides feedback to WTD on the level of satisfaction among our local agency customers with their participation in MWPAAC, an advisory committee of local sewer agencies. Data for the measure comes from the annual Customer Feedback Survey, and the score is rolled up from several questions that gather feedback about the quality of meetings, the quality of information received from the WTD Director and staff, the opportunity to express opinions, needs and concerns, and the ability to obtain needed information from the division.

2011 results: 4.48

2011 target: ≥ 4.0 on a 1-5 scale

2012 target: ≥ 4.0 on a 1-5 scale

Influencing factors: This measure now has three years of data collected from the annual Customer Feedback Survey. The score increased from 3.44 for 2007 to 3.67 for 2008, increased again to 3.94 for 2009 and dropped slightly to 3.92, in 2010 and the current score of 4.48 demonstrates a steady and sustaining increase in overall satisfaction with the quality of MWPAAC meetings and the quality of information received from WTD's Director and staff on important programs, projects and initiatives. Factors such as the quality of Director's reports, the ability of the local agencies to express their opinions, needs and concerns, and the ability to get the information they need from WTD were rated the highest.

Strategies going forward: WTD continually seeks ways to improve MWPAAC meetings, to make them as productive, useful, informative and convenient as possible; and to provide reports and information in a timely and thorough manner to the local agencies. In the past two years, WTD has restructured the format of meetings and added a professional facilitator. In 2009 WTD changed the location, time, and duration of the monthly meetings to increase convenience for most attendees. Balancing a central location with traffic and parking concerns is a key consideration, as attendees must drive from all parts of the County's sewer service area, including some who come from Snohomish County in the north and as far south as Auburn and Algona, to attend the meetings.

Technical Notes

For definitions and more detail.

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PERFORMANCE MEASURES

FISCAL AND ECONOMIC

This roll-up measure summarizes the degree DNRP is achieving its **Fiscal and Economic goal**:

Support King County's economic development goals and ensure ratepayer value through effective, efficient and equitable program implementation.

2013 results

DNRP performance in 2013 approaches target in all four objectives of the Fiscal and Objectives of this goal:

- Rates and Fees
- Efficiency
- Capital Investment
- Entrepreneurial and Enterprise revenue.

Key influencing factors

For many years now, the Parks Division has been empowered to engage in "good-government" initiatives and embrace non-traditional ways of doing business. This transformation from a centrally funded service provider to an entrepreneurial, performance-driven organization has help ensure that parks serve to enhance communities and the region's high quality of life, even during tight fiscal times.

The Wastewater Treatment Division is just completing a 10 year productivity initiative program, a joint labor and management effort within the division that intended to save ratepayers as much as $67 million over 10 years. The program allows employee flexibility to apply some business practices used in private industry to cut operating costs, increase productivity and continue a high level of service and environmental protection for county residents.

The Solid Waste Division has evaluated a range of options to increase efficiencies in support of stable rates. Transfer stations have been reconfigured to reduce staffing requirements, while outreach and partnership efforts have led to higher levels of residential recycling and lower residential solid waste volumes.

Strategies going forward

All DNRP divisions will continue to explore and implement opportunities to increase operational efficiencies. Capital investments are being made with an eye toward energy efficiency and reducing operations and maintenance costs.

The Wastewater Treatment Division has expanded its pilot productivity initiative to include capital projects. The Solid Waste Division has plans to reduce contracting costs by bringing recyclable materials hauling in-house, while the Parks Division will continue building partnerships to enhance revenue generation and reduce operation and maintenance costs.

More information about DNRP results on 'Fiscal and Economic' objectives can be seen as these pages:

- **Rates and Fees**
- **Efficiency**
- **Capital Investment**
- **Entrepreneurial Revenue**

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Related Information

About DNRP

DNRP Annual Report - (4 Mb PDF)

DNRP Budget And Organization Chart

GIS Center

About SWD

About WLR

Parks Business Plan

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PERFORMANCE MEASURES

RATES AND FEES

2013 Rating: ⇔

About this measure: DNRP seeks to minimize rates and fees while maximizing value of service. Major programs track rates and fee against the level of inflation and benchmark against similar service providers. For inflation, we look at changes in the consumer price index over a 10 year time horizon.

Because benchmarking against similar service providers and jurisdictions is time intensive, this is done only every other year for most of our programs. Comparative programs are selected for proximity, range of services, and relative cost of doing business.

Wastewater Treatment Division (WTD)

Monthly residential wastewater service fee increases vs. Consumer Price Index (inflation) increases

2012 Wastewater Rate: $36.10

2012 Target: Sewer Rate if it had risen by rate of inflation from the 2003 rate: $29.04

Difference: $7.06 or 24%

Influencing factors: WTD is concluding a period of major construction activity as it invests in future service, including construction of the Brightwater Treatment Plant and its conveyance system. Additionally, the upcoming expenditures of the Combined Sewer Overflow Program and meeting Consent Decree requirements will tend to drive the rate upwards.

Strategy going forward: WTD implemented a Productivity Initiative to reduce operating costs and reduce future rate pressure. This program was replaced with the Strategic Initiative Program that will be used to meet 3% efficiency target, a continuous improvement program, and an employee suggestion program called Bright Ideas. Whereas the Productivity Initiative primarily focused on the operating budget, the new programs will seek to reduce cost and increase efficiency within operating and capital programs.

The previous two-year rate for 2009-2010 was $31.90. The current two-year rate for 2011 and 2012 is $36.10.

Rate vs. comparable agencies

Rate comparisons provide qualitative information. As a result, there are no targets established for this measure. The wastewater service rate in 2012 was 1.98% lower than the $36.83 average of fees from other jurisdictions and 5.62% higher than the $34.18 median. The rate is lower than the average for the first time in five years and the rate has moved closer to the median over the past three years.

There are significant differences among these utilities in the extent and level of services they provide. For example, some may not provide full secondary treatment, recycle biosolids for compost, have WTD's strict odor control policy, produce reclaimed water or capture methane gas.

The program will support WTD efficiency gains through three main areas:

1. Employee Suggestions (Bright Ideas Program)
2. Efficiency improvements made as a part of work
3. High level process improvement recommendations

Related Information

About DNRP

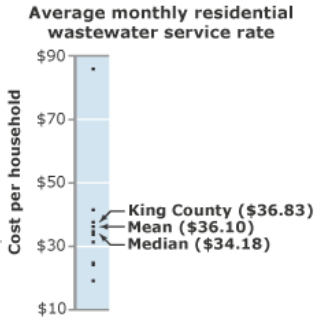
DNRP Annual Report - (5.4 Mb PDF)

GIS Center

About SWD

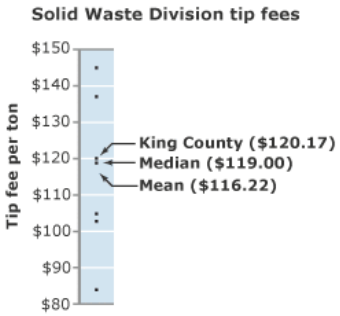
About WLR

Parks Business Plan



Solid Waste Division (SWD)

Comparison of tip fee with other agencies that provide comparable services



2013 Results: As of December 2013, the King County solid waste tip fee of $129.40 per ton, including surcharge and tax, was above the mean ($121.22) and above the median ($119.00) of the tip fees of seven comparable jurisdictions.

2013 Target: For the solid waste tip fee to continue to be below the mean and the median of other comparable jurisdictions.

2014 Target: For the solid waste tip fee to continue to be below the mean and the median of other comparable jurisdictions.

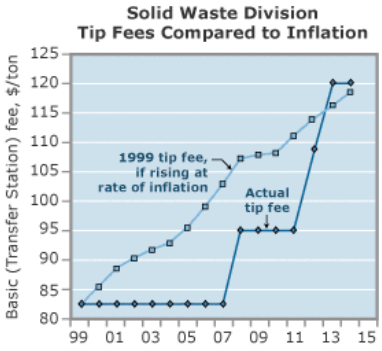
Influencing Factors: The solid waste tip fee (including surcharge and tax) increased from $117.82 per ton in 2012 to $129.40 per ton in 2013. The fee increase covers rising operating costs and will help pay for modernizing the 1960s-era network of transfer stations.

Strategy Going Forward: The solid waste tip fee will remain at $129.40 in 2014.

Technical Notes

For definitions and more detail.

Solid Waste Division tip fee compared to rate of inflation



2013 Results: The 2013 tip fee of $120.17 was more than the $115.93 it would have been if it had risen at the rate of inflation.

2013 Target: For SWD tip fee to be lower than if it had risen at the rate of inflation since 2003.

2014 Target: For SWD tip fee to be lower than if it had risen at the rate of inflation since 2004.

Influencing Factors: The 2013 tip fee included about $12.80 per ton to fund transfer system upgrades. These planned capital costs caused the fee to exceed a fee rising at the rate of inflation.

Strategy Going Forward: The cost of renovating and upgrading the regional transfer system is a major contributor to solid waste fee increases. It may be useful in the future to review debt service and operating costs separately for this measure. The fee of $120.17 was set assuming bond terms ending in 15 years; however, due to an extension of interlocal agreements by most system cities, new debt was bonded for 28 years. This extension and favorable bonds rates saved about $4.40 per ton in 2013 and will save an estimated $4.00 per ton in 2014; these savings will help to mitigate future rate increases. Additionally, in 2013 the division reviewed the Transfer System Plan; resulting recommendations may produce additional savings that would further mitigate future rate increases.

Water and Land Resources Division (WLRD)

Single Family Storm Water Rate Compared to Inflation

2013 target: Stormwater fee increases are on par with regional inflation

2013 results: Stormwater fee increases more than regional inflation

The 2013 rate increase was 13%, well above the projected CPI-U. The target was not met due to the 2013 rate increase from $133/parcel to $155/parcel. The adopted rate was intended not only to cover inflationary costs, but also cost increases beyond inflation to meet NPDES permit requirements. It also includes an expansion of the SWM capital construction program. For 2011 and 2012, the Rate was $133.00 per SFR (Single Family Residence).

2014 target: Stormwater fees are on par with regional inflation over 10 year horizon

Single Family Storm Water Rate Compared to Other Agencies

2013 Target: maintain stormwater fees that at the median level of comparable utilities

2013 Results: fees are at the median of comparable utilities

KCSWM Rate for 2013 and 2014 is $151. The mean rate for 2013 was $155.67; Median was $155.16

For 2011 and 2012, the Rate was $133.00 per SFR (Single Family Residence).

WLRD will continue to track the mean and median against all local jurisdictions (about 20), and NPDES Phase 1 jurisdictions (about 5). Going forward WLRD will track the single family storm water rate mean and median against both groups.

2014 Target: maintain stormwater fees that at the median level of comparable utilities

Influencing factors: King County offers one of the most robust surface water management programs in the region. As a large jurisdiction, it is governed by Phase I of the National Pollutant Discharge Elimination System Permit by the State Department of Ecology to comply with the federal, Clean Water Act. A new NPDES Permit and requirements began August 1st, 2013. Permit requirements for the next six years are more stringent, as the state is grappling with declines in the health of its surface waters and the Puget Sound.

Strategy going forward: WLRD will continue making surface water activities more efficient while prioritizing how surface water revenues are spent.

Comparison of surface water management fees with inflation

2012 target: Increase surface water management fees at a rate commensurate or no more than inflation. The King County Surface Water Management (SWM) was $133.00 / Single Family Resident (SFR) was unchanged from 2011

2012 results: the 2012 SWM fee of $133.00 was unchanged from 2011, while the Seattle Consumer Price Index increased 1.4% during 2012.

Influencing factors: Many factors drive changes to rates and fees, including storm events that induce flooding and other natural disasters, changes in the economy, additional development, demands for natural resource management services, increased regulatory requirements and changes to the rate base.

Strategy going forward: During 2012 WLRD completed a SWM rate study. The study evaluated current rate structure, taking into account a 2011 budget proviso regarding the program's discount structure as well as assessing the impact of changes in parcel characteristics for residential properties in the SWM service area since the last rate study. The study also evaluated revenue requirements for the King County SWM program in 2013 and 2014 and evaluated program needs in out years beyond 2014.

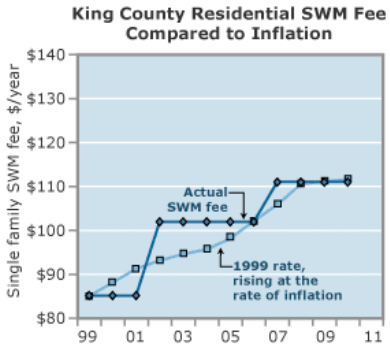
The SWM rate was increased by 13.5% for 2013 and 2014, so the rate target will be exceeded in coming years.

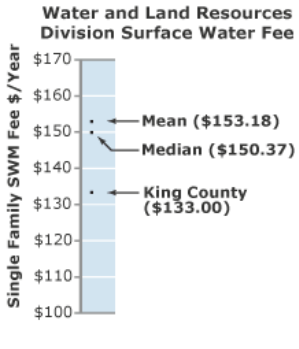
Surface water rate vs. comparable agencies

2011 Results: There was a rate increase from $111.00 to $133.00 per Single Family Residence (SFR). The rate remains below the mean and median rates of comparable jurisdictions.

Influencing factors: King County offers one of the most robust surface water management programs in the region. As a large jurisdiction it is governed by Phase I of the National Pollutant Discharge Elimination System Permit by the State Department of Ecology to comply with the federal, Clean Water Act. Permit requirements this and for the next six years are more stringent as the state is grappling with declines in the health of its surface waters and the Puget Sound.

Strategy going forward: WLRD is undertaking a rate study in 2012. The study will evaluate the current rate structure, taking into account a 2011 budget proviso regarding the program's discount structure as well as assess the impact of changes in parcel characteristics for residential properties in the SWM service area since the last rate study. The study will also evaluate revenue requirements for the King County SWM program in 2013 and 2014 and evaluate program needs in out years beyond 2014. WLRD will continue making surface water activities more efficient while prioritizing how surface water revenues are spent.





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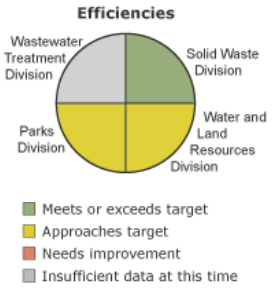
PERFORMANCE MEASURES

EFFICIENCY

2013 Rating: ⇔

Solid Waste Division (SWD)



Transfer, transport, and disposal operating costs per ton of solid waste

About This Performance Measure: This measure represents all operating costs per ton of solid waste for the Solid Waste Division, including costs for the eight transfer stations and two drop boxes, transportation of solid waste from the transfer facilities to the Cedar Hills Landfill, and operation of the Cedar Hills Landfill.

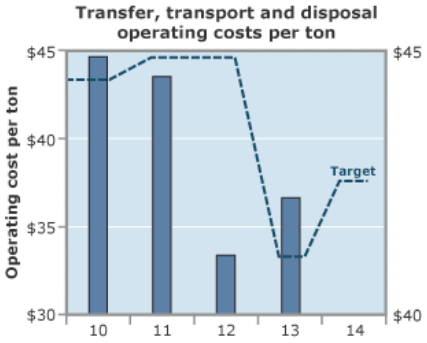
2013 Results: $36.63

2013 Target: $33.17

2014 Target: $37.67

Influencing Factors: in 2013, a new recycling area opened at Bow Lake. Forecasted to process 5,300 tons of recyclable materials that would otherwise be disposed, this new facility is helping the region achieve its recycling goals. Operation of the recycling area requires additional staff and equipment, resulting in an increase in cost per ton. In addition, unbudgeted overtime was needed during training and startup of Bow Lake; however, these costs will not carry forward.

Strategy Going Forward: The Solid Waste Division continues to ensure that residents in the county have access to safe, reliable, efficient, and affordable solid waste handling and disposal services, while working to increase recycling in the region. The Operations section continues to review its processes to identify areas for improvement.



Technical Notes

For definitions and more detail.

Water and Land Resources Division (WLRD)

Efficiency Measures

About this measure: Water and Land Resources administers programs funded from over forty different sources, making it impossible to quantify a single all-encompassing efficiency measure. These two measures address efficiency within two key revenue sources — surface water management and the noxious weeds program.

Noxious Weeds

About this measure: The Noxious Weed Control Program is tasked with controlling state-mandated noxious weeds throughout the county on private and public lands. This task is accomplished through technical assistance, regulatory actions, cooperative grant-based projects and in-house control work. The efficiency of the program's work is measured by dividing the total program expenditures by the area of noxious weeds controlled as a result of the program's activities.

Related Information

About DNRP

DNRP Annual Report - (5.4 Mb PDF)

GIS Center

About SWD

About WLR

Parks Business Plan

The cost per square foot of noxious weed area controlled by the Noxious Weed Control Program increased somewhat in 2013 compared to 2012, but the program met the target and achieved results similar to past years. The slight increase in cost in 2013 from 2012 was likely due to the increased costs of achieving control for a few very large infestations in 2013 in wetlands and on waterways, as well as increases in county overhead costs.

However, the program did demonstrate efficiency in the number of sites controlled. In 2013, 11% more sites were controlled than in 2012 and the cost per infestation decreased from $146 to $132. The reduction in cost per infestation reflects program efficiencies in data collection as well as the increased cooperation and effective control by landowners requiring less time per infestation for landowner communications.

2013 target: 10 cents per square foot of noxious weed area controlled

2013 results: 9 cents per square foot of noxious weed area controlled

2014 target: 9 cents per square foot of noxious weed area controlled

Influencing factors: There are significant fixed costs associated with visiting each noxious weed infestation, regardless of size. The Noxious Weed Control Program has focused on more efficient methods of communicating with landowners to gain their cooperation and reducing the number of expensive field visits necessary to achieve this cooperation and effective control results.

Strategy going forward: Continue to survey and receive information from King County residents, since effective communications, education and resident reports of infestations help the program gain efficiencies by increasing active community participation in noxious weed control. Improve on the programâ€™s mobile data collection capacity.

- Aim to increase the level of voluntary compliance and minimize the use of expensive regulatory mechanisms
- Continue to pursue more cost-effective weed control technologies such as biological control
- Continue to focus on prevention and early detection / rapid response to avoid or minimize the costs of controlling new infestations

Surface Water Management — Maintenance Cost per Facility:

About this measure: Maintaining stormwater flow control facilities are one of the County's primary responsibilities funded by surface water management fees. Stormwater facilities (flow control and treatment) that function properly serve to protect public safety, properties and streams from the increased runoff and pollution generated by developed lands.

Costs used to calculate the efficiency of this activity include inspecting, repair and maintenance, and vegetation control of stormwater flow control facilities. King County's Roads Division in the Department of Transportation performs the majority of facility maintenance work.

2013 Target: $1,500 average annual cost per facility

2013 Results: The average maintenance cost per facility was $1,447 using a three-year average from 2011 to 2013

2014 Target: $1,500 average annual cost per facility

During 2013 a review of cost factors and assumptions used to calculate maintenance expenditure was undertaken. The review outcome was used to verify the $1,500 average cost per facility target or change the target; and to provide certainty and finalization to the costing methodology.

For this measure the cost factors and assumptions for the target have been reformulated and are now based on the average maintenance cost per facility using a three-year average.

Influencing Factors: The Residential Stormwater Flow Control Program asset management facilities costs were used to calculate facility average maintenance costs. Since each facility is inspected at least once every three years and inspections occur one year prior to the maintenance work being performed; a three-year average was applied. Inspection & maintenance costs are included in the target. The three-average includes facilities with no inspection and/or maintenance costs during the maintenance activity work year; using this method the three-year average for 2013, 2012 and 2011 are: $1,447; $1,391; and $1,501 respectively.

Strategy going forward: With stormwater control facilities aging and new 2013 NPDES permit requirements; potential facility replacements or enhancements including new staffing requirements, inspection and maintenance costs will continue to fluctuate. However we will continue to implement process improvements to ensure efficiency in stormwater facility maintenance.

Parks Division

Ratio of employees to acres maintained

About this measure: This efficiency measure is a ratio of the number of acres in Parks' inventory maintained to the number of

full-time employees (FTEs) in the Resource Section.

	FTEs	Acres	Acres to FTE
2008 Target	101	26,176	259
2008 Actual	96	25,703	268
2009 Target	96	26,500	276
2009 Actual	96	25,790	267
2010 Target	96	26,500	276
2010 Actual	94	26,282	280
2011 Target	95	26,582	281
2011 Actual	95	26,757	283
2012 Target	97	27,057	280
2012 Actual	95	26,950	279
2013 Target	99	27,250	277
2013 Actual	95	27,891	283
2014 Target[1]	-	-	-

[1]The Division is working with King County performance management staff to develop more illustrative efficiency measures for the new levy period.

Influencing factors: As a key policy direction in 2008, the Division increased levels of maintenance employees as promised to the voters in the passing of the 2008-2013 Parks Operations Levy. The levy included funding to help keep up with the annual addition of lands, which were funded by the Parks Open Space and Trails Levy, the Conservation Futures Tax, and other sources.

While this measure does not illustrate the level of maintenance provided to our open space inventory, it does indicate if there is a proportional increase in maintenance support to the amount of open space acres added to the King County inventory. Not included in this measure are seasonal staff and volunteers who also help the Division maintain its natural area.

Various factors bear on the quality and type of maintenance that Division staff are able to perform, including:

- Public and employee safety concerns;
- Mandated requirements (e.g. various required permit-driven activities, sensitive areas protection, integrated pest management, drainage maintenance);
- Scheduled, revenue-generating use of park assets, including athletic fields, picnic shelters, and other event facilities, where revenue would be lost if maintenance action is not taken;
- High community expectations or high-visibility projects (e.g. heavily-used trail corridor, new athletic fields, backcountry trailhead);
- Storm and other natural event damage;
- Preserve and protect projects that prevent other damage (e.g. roof repairs, culvert replacement, field maintenance);
- Unscheduled public use (e.g. trail-use, drop-in athletic play, dog off-leash use).

Strategy going forward: The 2014-2019 Parks, Open Space, and Trails Replacement Levy recently passed with overwhelming support. The Replacement Levy expands acquisition funding from $4.5 million to $6 million annually, as well as continues funding for stewardship and maintenance of the newly acquired acres. The Division continues to leverage community and volunteer efforts through Park Ambassadors, Adopt-a-Park, and Community Partnership Grants, and continuing our partnerships with agencies such as the Washington Trails Association and EarthCorps, to improve our existing service levels.

Wastewater Treatment Division (WTD)

Cost per pound of Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) removed

About this performance measure: WTD measures efficiency in terms of operating costs per pound of Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) removed during the treatment process. BOD and TSS are the primary pollutants that the treatment process is designed to remove, and these pollutants are directly monitored in the plants' water quality permits.

2008 Results: $0.3537

2008 Target: (adjusted for inflation) = $0.3365

Influencing factors: Steps taken through the productivity initiative have helped WTD achieve operational efficiencies represented by this measure.

Strategy going forward: WTD will continue to seek reductions in operating costs through its productivity initiative while maintaining high quality standards and service delivery.

Technical Notes

For definitions and more detail.

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PERFORMANCE MEASURES

CAPITAL INVESTMENT

About this measure: DNRP invests significant financial resources into system improvements of the natural and built environment. The Wastewater Treatment Division is focusing capital investments on increasing reliability and expanding capacity of the wastewater conveyance and treatment system. The Parks Division has been primarily steering capital investments toward improvements in the regional trail network. Solid Waste Division capital projects have been targeting transfer stations improvement, while the Water and Land Resource Division has been investing in habitat enhancements and protecting homes and businesses from flooding.

2013 Rating:

Solid Waste Division (SWD)

Percent of milestones achieved for Solid Waste Division capital projects

About this performance measure: This performance measure provides a snapshot of Capital Improvement Program (CIP) accomplishments. This is achieved by comparing actual expenditures for CIP projects reported in the King County ORACLE E-Business Suite (EBS) reporting system with the projections for expenditures made at the beginning of the year. The target for this measure is for actual expenditures to be at least 75% of forecasted expenditures.

2013 Results: 96%

2013 Target: 75%

2014 Target: 75%

Influencing Factors: The main factor influencing the Construction Fund in 2013 was the completion of construction of a new recycling and transfer station at Bow Lake. Design work also continued for the replacement of the Factoria Transfer Station. Performance for the Landfill Reserve Fund in 2013 was most influenced by the Cedar Hills Area 7 closure project.

Strategy Going Forward: In 2014, the Division will continue to modernize the solid waste transfer system in preparation for the eventual closure of the Cedar Hills Regional Landfill. In 2014, construction of the new Factoria Transfer Station is planned to start and planning continues for the new transfer station proposed for South King County. In addition, planning and design for the development of a new refuse area (area 8) at the Cedar Hills Rural Landfill will continue.

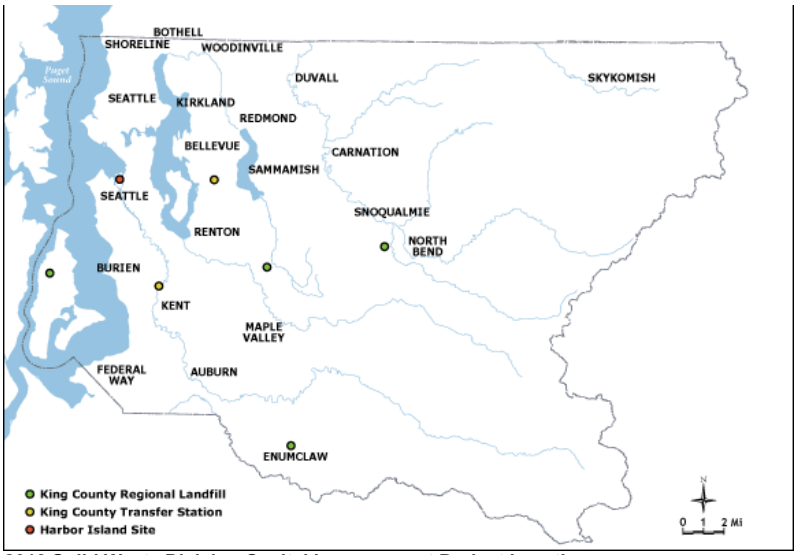
Technical Notes: The Construction Fund forecast was $24.3M and expenditures through December were $23.2M, or 95% of forecast. The Landfill Reserve Fund forecast was $4.5M and actual expenditures were $4.6M, or 102% of forecast. The 96% program performance figure is the weighted average of the actual performance for both funds. Weighting is determined by dividing the total expenditures for both funds by the total forecasts for both funds.

Related Information

Brightwater Project

Interactive Stormwater Projects Map

Business Plan



2013 Solid Waste Division Capital Improvement Project Locations
Click to download the PDF version.

Water and Land Resources Division (WLRD)

Capital Investment Summary Restoring and Protecting Waterways

Every year, between 25 and 30 percent of King County generated surface water management (SWM) fees are transferred to its capital program as part of the "pay-as-you-go" budget concept and to service the debt on SWM bonds. The SWM fees are used for constructing large and small projects to improve storm drainage, restore habitat and create or improve streams and wetlands. Capital funds are also used to leverage grants from other sources.

About this measure: This measure for 2013 has been modified and consists of four different measures.

1. Storm Water Services Capital "**Projects**" are implemented on budget and on schedule
2. Storm Water Services "**Programs**" are implemented on budget and on schedule
3. Restoration Projects - Ensure WLR Division capital priorities are implemented on budget and on schedule
4. Restoration Projects- Percentage of baselined capital projects on schedule.

The basis for all four measures is that they compare completed project milestone dates to planned completion dates to obtain a percentage of milestones accomplished on a quarterly and annual basis. Tracking of this measure helps management evaluate the success of the group at planning, managing, and completing projects. Monitoring on a quarterly basis allows managers to identify potential obstacles earlier and to minimize delays.

Data reported for 2013 reflect the milestone accomplishments of the Storm Water Engineering Services Unit and the Ecological Services section, respectively.

1. Measure: Storm Water Services Capital "**Projects**" are implemented on budget and on schedule

Target: 80% achievement of milestones for each CIP projects funded at $75,000 or greater.

Target Results: Not Achieved

Only 41% of CIP milestones were completed; 27 milestones were planned and 11 milestones achieved Delays were due to external and internal factors: External factors include the delay of grant awards, permitting issues, and negotiation with developers. Internal factors include limited capital funding and staffing redirected to operating, Asset Management, and unforeseen staffing losses.

NOTE: Target for 2014 may be changed.

2. Measure: Storm Water Services "Programs" are implemented on budget and on schedule

Target: Total 80% completion of sub-projects in programs, which will meet the set goals of programs. The Storm Water Service programs include:

- EO (Emergency Opportunities);
- NDAP (Neighborhood Drainage Assistance Program);
- ADAP (Agricultural Drainage Assistance Program);
- Facilities Remediation;
- Feasibility;
- Monitoring & Maintenance;
- Hazard Dams and Lakes.

Target Results: Approaching Target

Achieved 75% completion of sub-projects in programs; Delays were due to staff availability. Staff was reassigned to work on other higher priority projects (e.g. installation of beaver dam pond leveler/deceiver at Lake McLeod and Deer Creek, and the Fairwood 4 emergency project.

Program Summary Results

Emergency Opportunities:

- Goal: Construct -1 project; Grant - 2 projects; Expect to complete construction project in 4th Quarter 2013
- Actual: Grant - 0 projects (projects are not ready for grant application); Construct - 4 project (2-beaver deceiver; 1-Hamm Creek log tie down; 1-Fairwood 4)

Neighborhood Drainage Assistance Program (NDAP)

- Actual: Quick Fix - 4 projects; Facility - 2 projects; Large - 2 projects.
- Agricultural Drainage Assistance Program (ADAP) Goal: Complete 2 to 4 projects. Actual: Built 1 project but closeout will be in 2014 because planting will be in 2014;

Agricultural Drainage Assistance Program (ADAP)

- Goal: Complete 2 to 4 projects.
- Actual: Built 1 project but closeout will be in 2014 because planting will be

Facilities Remediation:

- Actual: 6-sub projects in the program none completed

Feasibility Studies

- Goal: 2 projects
- Actual completed - 0 projects due;

Damns and Lakes:

- Actual: 2-Beaver deceiver maintenance.

Monitoring and Maintenance Program

- Actual -one project because the M&M for subprojects is not actually complete;

3. Measure: Restoration Projects - Ensure WLR Division capital priorities are implemented on budget and on schedule

- **Target:** 75% CIP Restoration milestones completed
- **Target Results:** Target Achieved - 22 of 26 (85%) of Restoration Project Milestones met during 2013.

4.Measure: Restoration Projects- Percentage of baselined capital projects on schedule.

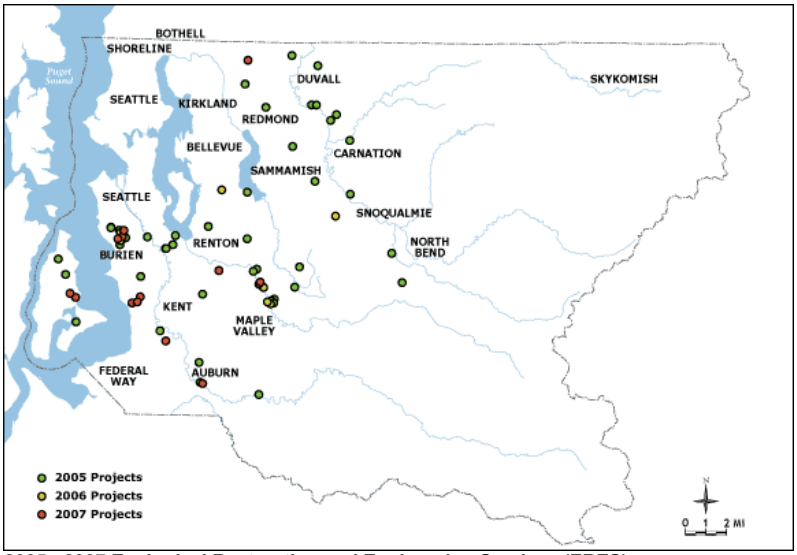
- **Target:** 100% of Baseline milestones
- **Target Results:** Approaching Target

Quarterly average of 79% of projects met quarterly milestone targets. This percentage is an average of each quarter's projects on schedule.

- 1st qtr.: 100% of projects were on schedule
- 2nd qtr.: 100% of projects were on schedule
- 3rd qtr.: 100% of projects were on schedule
- 4th qtr.: 50% of projects were on schedule

Influencing factors: Milestone completion rates are influenced by many factors including availability of funding, unclear and/or inconsistent stakeholder goals, unforeseen site conditions, public opposition to a project, and/or changes in regulatory requirements. In recent years, habitat CIP projects have also become more dependent on outside funding via grants and partnership agreements with outside agencies. Both increase the potential for delays as project teams wait for input or approvals from external partners and/or clients.

Strategy going forward: Section management tracks milestone completion to help identify and overcome obstacles and assure cost effective CIP implementation. When performance falls short of planned milestone targets, managers investigate the cause of delays, evaluate potential solutions and can take proactive steps to get the project back on course.



2005 - 2007 Ecological Restoration and Engineering Services (ERES)
Click to download the PDF version.

Wastewater Treatment Division (WTD)

Capital investment summary

About this measure: WTD tracks accomplishment of scheduled major milestones for capital projects. In response to a county wide effort by the Office of Management and Budget (OMB) to track achievement of scheduled milestones for applicable CIP projects, WTD also reports this information to OMB twice a year. The milestones are the planned completion dates for planning, predesign, final design, implementation and close out of all capital projects.

2008 results: 71% of projects met their planned completion dates for major milestones in 2008.

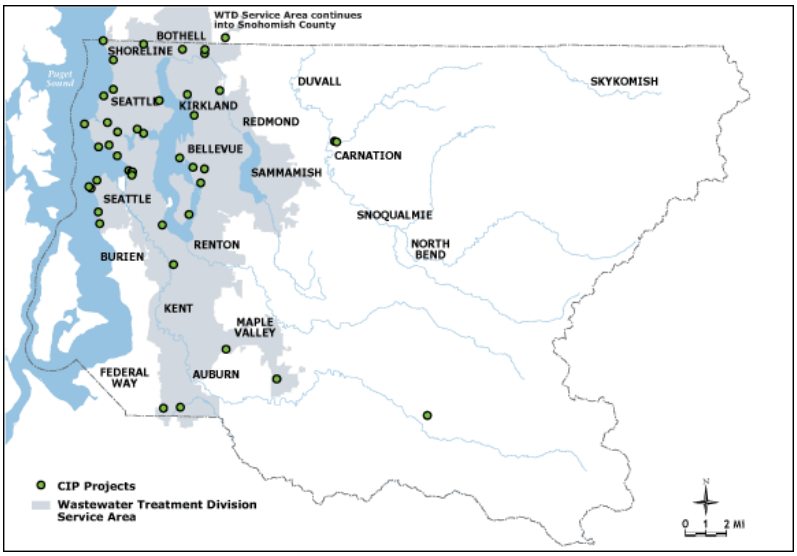
2008 target: 75% of projects will meet the planned completion dates for major milestones

2009 target: 75% of projects will meet the planned completion dates for major milestones

Influencing factors: Scheduled project milestones entered into WTD's common project management database, Filemaker Pro, have been inconsistently maintained and updated by all project managers in the past. There have also been inconsistencies in the way individual project managers schedule milestone accomplishment dates. Therefore actual accomplishment dates for scheduled milestones have often not met the scheduled completion dates. New quarterly reporting requirements now prompt project managers to regularly check and update milestone schedules and log any reasons for schedule delays.

Strategy going forward: WTD is currently implementing a standardized project management approach based on Project Management International (PMI) standards. Increased accuracy in project scheduling is one of the key areas of focus in

implementing these new project management standards. WTD project managers have taken training in PMI project management practices and will begin implementing these practices on their projects. This should result in higher accuracy in scheduling, and a higher accomplishment rate in meeting scheduled project milestones.



Wastewater Treatment Division Capital Improvement Project (CIP) Locations
2005 - 2007
Click to download the PDF version.

Parks Division

Parks Division Capital Investment Summary

About this measure: This measure tracks the degree that capital projects meet design and construction milestones for its multiple-phased appropriation (MPA) projects. Each year, the King County Joint Advisory Group (JAG), a capital project review group comprised of senior executive and legislative branch officials, selects projects for closer scrutiny. These projects have more stringent and more frequent reporting requirements to the Executive Office and County Council.

Performance data for these projects compares budget, schedule, and scope status each quarter to baseline targets and assigned a green, yellow, or red score based on variance from the baseline.

Currently, the Division is reporting on two trail segments of the East Lake Sammamish Trail: 2.2 miles of a 12-foot asphalt segment in the City of Issaquah (Issaquah segment) and 1.2 miles of 12-foot wide asphalt segment in the City of Redmond (Redmond segment).

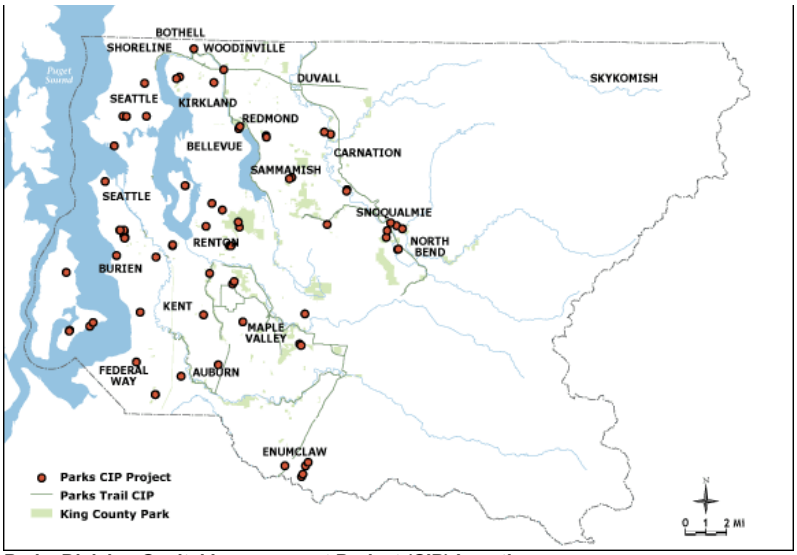
2013 results

Issaquah:
Scope — green
Schedule — yellow
Budget — green

Redmond:
Scope — green
Schedule — green
Budget — green

Influencing factors: Challenges associated with property acquisition and permitting slowed the completion of several projects and had a significant effect on hitting project development milestones

Strategy going forward: The Parks Division, and Facilities Management Division staff who develop capital projects for the Parks Division, will continue to seek efficiencies in the design and construction process to improve the degree of capital development milestones met.



Parks Division Capital Improvement Project (CIP) Locations
2004 - 2007
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PERFORMANCE MEASURES

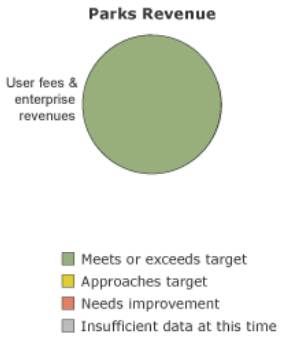
ENTREPRENEURIAL REVENUE

2013 Rating:

About this measure: Since 2003, the Parks Division has been maximizing business revenues and exploring other endeavors that reduce the tax subsidy needed for active recreation facilities. The two elements of the division's business revenues include: **enterprise/entrepreneurial** and **user fee** revenues.

Enterprise/entrepreneurial revenues include a myriad of non-traditional activities, ranging from corporate sponsorships and other creative promotions to special facility rentals (such as the Marymoor concert series and Cirque du Soleil). These are generated as a result of cultivation efforts and partnerships established by division staff.

User fee revenues represent more traditional recreational activities, such as ballfield usage fees, and are generated according to what the market will bear.



This measure tracks the division's success in reaching its goal, as established in the 2003 Parks Business Plan, of increasing business revenue five percent each year from an established baseline, adjusted for the transfer of high-revenue, higher-cost facilities (principally pools).

2013 target: $4,926,000

2013 result: $5,405,000

2014 target[1]: $5,074,000

Analysis of Business Revenues: Based on preliminary year-end data, the Division's 2013 business revenues exceeded its annual target. This increase is largely due to strong facility bookings throughout the system, facility rentals and events throughout the year at the Weyerhaeuser King County Aquatic Center (KCAC), and several successful events at Marymoor Park.

Overall, revenues for Marymoor Park are up 23 percent from 2012. This is largely due to large special events at the park, including Cirque du Soleil and the Marymoor Park Concerts. Revenues at the Weyerhaeuser King County Aquatic Center (WKCAC) are up slightly in 2013, with a total of 41 events in 2013 compared to 39 in 2012. The facility hosted a record number of international, national, and regional events and competitions, including the International Gay and Lesbian Aquatics Championship, the North America Swimming Cup, and the 2013 International Remote Operated Vehicles (ROV) Championship.

Over the past decade, the division has worked to maximize the revenue-generating capacity of its current assets. By converting dirt ballfields into multi-sport synthetic turf fields, the fields can accommodate a growing spectrum of sports, games can be played year-round, and with fewer rainouts. Camping revenue increased by nearly a quarter this year at Tolt-MacDonald Park and Campground, which was largely due to the inaugural Timber! Outdoor Music Festival, a new two-day music festival that booked the entire park. Furthermore, yurts and the camping container continue to grow in popularity.

Strategy going forward: Although the Division has achieved its business revenue target all but one year since 2004, the 2014-2019 Levy Task Force agreed five percent was an unsustainable target going forward. The Division has revised its annual target to grow at three percent each year, rather than five percent. Additionally, the Division is exploring new and creative ways to expand its revenue base.

The Division celebrated its 75th anniversary by launching the King County Parks Foundation with a $75,000 founding gift from Laird Norton Wealth Management. The funds will be managed by The Seattle Foundation. The Foundation will support Parks' efforts to grow and connect green space and trails networks, expand recreational opportunities across the county's parks and trails, and invest in Parks' long-term legacy, including the Eastside Rail Corridor and the Maury Island open space site.

For more information about the division's entrepreneurial efforts, please see **past quarterly reports**.

[1] The 2014-2019 levy includes an annual business revenue target which grows at three percent, rather than five percent.

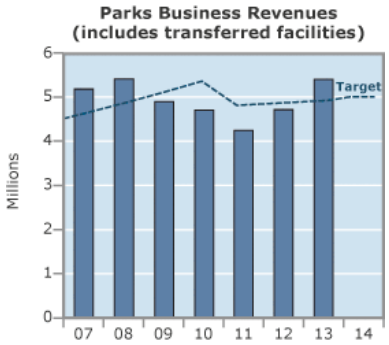
Technical Notes

For definitions and more detail.

Related Information

Parks & Recreation Partnerships

GIS Center Data Sales



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PERFORMANCE MEASURES

QUALITY WORKFORCE

This roll-up measure summarizes the degree DNRP is achieving its **Quality Workforce goal**:

Develop and empower our most valuable asset — our employees; build internal capacity for excellence, equity and fairness in service delivery.

2013 results

In this goal, DNRP is creating new baseline measures and tracking progress toward four primary objectives:

- Employee and workplace safety
- Employee satisfaction and workplace improvements
- Leadership development
- Workforce diversity

Key influencing factors

DNRP invests programmatically in workforce and workplace enhancements, while facing significant challenges with an aging workforce. With a wide array of operational responsibilities, including wastewater treatment plant and solid waste transfer station operations, grounds and forest management, flood control and hazardous waste management, there is strong need and demand for safety training, technology support, and ongoing enhancements to communication and organizational practices.

DNRP University has been an effective format for delivering training to an array of administrative and field-based employees. Workplace safety and emergency management readiness are ongoing priorities, and resource needs assessments help keep staff equipped with the right tools for doing their jobs.

Divisions and programs have active processes for achieving the policy intent of King County's Equity and Social Justice Ordinance. To address equity and fairness in service delivery, programs are:

- mapping how their actions bear on determinants of equity
- reviewing equity considerations in capital programs, and
- improving inclusiveness in community engagement.

ESJ Basic training is being delivered to employees, helping build our collective ability to apply available tools, including community engagement guide, translation program, equity impact review, and baseline determinants of equity.

Strategies going forward

All DNRP divisions will continue to improve workforce quality, enhance workplace safety, and build capacity for equity and fairness in service delivery.

DNRP's Leadership Initiative is supporting 360 degree surveys for Department and Division directors and managers, and will expand this service to include supervisors in 2013. To date, the return rate for reviewers asked to participate is over 92%. This service informs personalized development plans for building competencies identified as highest priority by those participating in 360 reviews.

To improve workforce diversity recruitment efforts are broadening their reach, minimum requirements barriers are being remedied and internal advancements are being fostered through more coordinated competency development.

Equity and Social Justice Basic Training will offered regularly, as well as training that supports the use of equity tools, including the translation program, community engagement guide, equity impact review, and determinants of equity.

Related Information

- DNRP Budget And Organization Chart
- Natural Resource Lands
- Greenprint
- Water and Land Resources Division
- King County Parks & Recreation
- Interactive Stormwater Projects Map

More information about DNRP results on 'Quality Workforce' objectives can be seen as these pages:

- **Employee and workplace safety**
- **Employee satisfaction and workplace improvements**
- Leadership development (page coming soon)
- Workforce diversity (page coming soon)

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PERFORMANCE MEASURES

EMPLOYEE SAFETY

2013 Rating:

About these measures: These measures look at the degree that targets are met for employee workplace practices and safety factors. The employee survey ratings detail trends in employee views on workplace practices, effectiveness, accountability, resource management and satisfaction. Employee accidents and lost time information are tracked by Human Resource personnel and help inform priorities for procedure and equipment improvements as well as training and safety education.

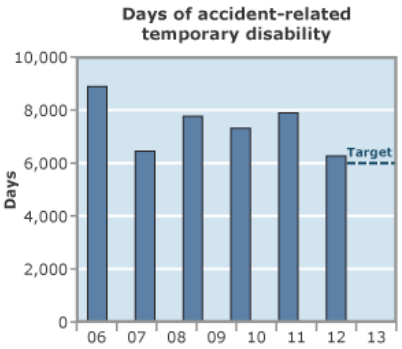
2008 employee safety results

2008 results: Total incidents with injuries: 164

Average days lost per injury: 13.2

2008 targets: Total incidents with injuries to fewer than 175

Average days lost per injury: 16



Influencing factors: 2008 was a positive year for accident and injury reduction. We are seeing positive trends in measurable areas of health and safety, in large part due to investments in safety education, training and process improvements.

DNRP has almost 1,800 regular employees, many of whom perform challenging tasks, including operating and maintaining complex infrastructure systems that run continuously, such as wastewater treatment plants and a wide variety of heavy machinery. Employees also respond to floods, chemical spills and illegal dumping, while monitoring conditions in deep woods, fast-flowing rivers, high peaks and in Puget Sound.

The decline in lost days due to injuries can be in part attributed to increasing light duty assignments for injured employees, procedure and equipment improvements, and increased safety ethic among field employees.

The aging of DNRP's workforce also affects future workplace accidents and injuries; as employees age, many of the physically demanding jobs create the likelihood of work-related injuries and chronic conditions.

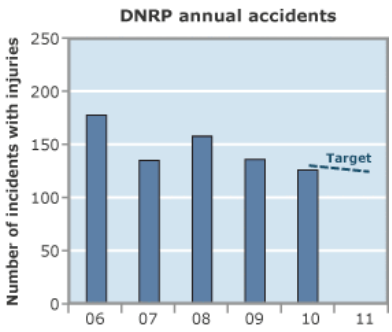
Strategy going forward: DNRP will continue to foster a safety ethic and make safety training a high priority. Emphasis will be placed on training related to safe procedures when performing tasks that lead to slip/trip hazards, or can create repetitive stress injuries. The King County Healthy Incentives program is instrumental in promoting a healthy lifestyle, which translates to employees who are more capable of performing physically demanding jobs.

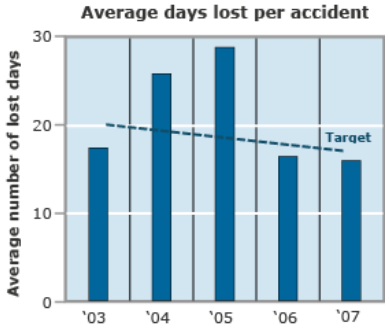
At the line operation level, we will advance out comprehensive approach to safety, with the following 5 focus areas:

1. **Build visible safety** by addressing safety issues as they arise, in planning, new equipment selection, project management.
2. **Act on the three P's:**
   a. Preparation (and planning)
   b. Processes (policy and procedures, task lists, check lists)
   c. Prevention (identifying and correcting hazards before they become incidents).
3. **Correct unsafe behavior** when it happens
4. **Correct unsafe conditions** and known hazards quickly
5. **Review all accidents** with long-term elimination of accidents in mind.

Related Information

- About DNRP
- DNRP Annual Report - (5.4 Mb PDF)
- GIS Center
- About SWD
- About WLR
- Parks Business Plan





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PERFORMANCE MEASURES

EMPLOYEE SATISFACTION

About these measures: These measures look at the degree that targets are met for employee workplace practices and safety factors. The employee survey ratings detail trends in employee views on workplace practices, effectiveness, accountability, resource management and satisfaction. Employee accidents and lost time information are tracked by Human Resource personnel and help inform priorities for procedure and equipment improvements as well as training and safety education.

Ratings from 2008 employee survey

Satisfaction Index: 3.63 on a 1-5 scale, 5 as best

Workplace Practices Index: 3.18

Availability of Resources Index: 3.58

Role of Employee Index: 4.04

2008 employee rating targets

Satisfaction Index: 3.75 on a 1-5 scale, 5 as best

Workplace Practices Index: 3.5

Availability of Resources Index: 3.75

Role of Employee Index: 4.2

Most ratings were similar to prior years, although employees rated the following statements more favorably in 2008 than in prior surveys:

"Employee are held accountable for their performance at work," and

"Overall, I'm satisfied with the level of involvement I have in decisions that affect my work."

Influencing factors: Overall, the ratings of DNRP employees on these survey questions have remained steady since the survey was first conducted in 2000. The slight increase in ratings for the accountability question is likely a result of an increased focus on supervisory responsibilities and addressing employee performance and behavior. Improvements in supervisory skills, labor relations and perceptions of fairness have likely contributed to the improved rating on the job satisfaction question.

Strategy going forward: DNRP's Human Resource work plans continue to focus on strengthening performance management, accountability, supervisory development and collaborative relationship with unions. This focus was developed in response to the concerns and perceptions expressed through prior employee surveys.

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